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THE HERBARTIAN PSYCHOLOGY APPLIED TO EDUCATION

*• ESSAYS APPLYING THE PSYCHOLOGY OF
JOHANN FRIEDRICH HERBART*

BY

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"I say nothing against Mr. —'s theory; if we are
to have one regimen for all minds, his seems to me as
good as any other"

GEORGE ELIOT

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THE HERBARTIAN PSYCHOLOGY

CHAPTER I

IDOLA SCHOLARUM

WHEN Scott wishes to give a reason for Reuben Butler's occasional errors of judgment, he uses the palliative parenthesis: "for the man was mortal, and had been a schoolmaster."

When Bacon seeks to discover why men in general are so liable to those errors, he classifies under four heads the causes which predispose men to go astray: these are the four familiar *idola*. Since this word is used in a philosophical connection, it goes without saying that there has been a controversy as to its exact meaning. Those who are wrong take the view that it means the ordinary thing set up to be worshipped, a meaning that has exposed Bacon to severe censure from foreign critics. Hallam sensibly maintains that the word retains the meaning it had among the Greeks, and stands for an image as opposed to the reality, a false appearance as contrasted with the true nature of a thing.

Sir Walter's apology for Reuben makes an unconscious but very satisfactory classification of the four idols: the idols of the tribe, of the den, of the market-

place, of the theatre. The idols of the tribe correspond to the causes that led Reuben to err as a mortal; the remaining three may be held responsible for his blunders as schoolmaster.

For the idols of the tribe are those to which all human beings as human beings are subject, such as the tendency to too easy generalizations, and to neglect contrary instances. Against those idols the schoolmaster must fight like an ordinary human being, a mere mortal.

When we come to the den, we begin to have a professional interest. "The idols of the den derive their origin from the peculiar nature of each individual's mind and body, and also *from education, habit, and accident.*"¹

The "mind and body" Reuben shares with other mortals; the rest applies to special walks in life, and to none more pointedly than to that of the schoolmaster. Most of our school-rooms are veritable dens into which the master is led by idols born of his peculiar circumstances. "Heracitus said well that men search for knowledge in lesser worlds, and not in the greater or common world."² True of all men, this is particularly true of the schoolmaster, who is apt to arrange all his conceptions to suit the limits of the lesser world of school, instead of fitting them to the greater world of life. If he be a High-School Master, a false quantity acquires a ridiculous importance in his ear; while if he be a Primary-School Master, parsing and analysis become the chief end of man. Things which in the greater world are only means, become in the school-room ends.

It is almost certain that Bacon founded this class of

¹ *Novum Organum*, Bk. I. 58.

² *Ibid*, 42.

idols upon the figure of the den in the *Republic*. As so many teachers live in the den, it is well to consider Plato's description:—

“Behold human beings living in an underground den, which has a mouth open towards the light, and reaching all along the den: here they have been from their childhood, and have their legs and necks chained so that they cannot move, and can only see before them, being prevented by the chains from turning round their heads. Above and behind them a fire is blazing at a distance, and between the fire and the prisoners there is a raised way; and you will see, if you look, a low wall built along the way, like the screen which marionette players have in front of them, over which they show the puppets.

“I see.

“And do you see, I said, men passing along the wall carrying all sorts of vessels and statues, and figures of animals made of wood and stone and various materials, which appear over the wall? Some of them are talking, others silent.

“You have shown me a strange image, and they are strange prisoners.

“Like ourselves, I replied; and they see only their own shadows, or the shadows of one another, which the fire throws on the opposite wall of the cave?

“True, he said; how could they see anything but the shadows if they *were never allowed to move their heads?*”¹

One main aim of this book is to induce the cave-

¹ *Republic*, VII. 514 (Jowett's Translation).

dwellers to move their heads. For they can move them if only they will. The chains around their necks and legs are only the chains of habit and indifference. So soon as the prisoners are convinced that there is anything worth seeing behind them, there will be little difficulty in turning round. The chains are self-imposed.

It is this unwillingness to turn round and look about them that marks the true cave-dweller. Many teachers are content to play with the little black puppets of their school world, and sturdily refuse to look beyond the school walls, or even to admit that there is a beyond.

It is reported that, in one of his rare lapses from massive common sense, Dr. Johnson said that everything that can be known about education has been known long ago. To the teachers who to-day take a pride in repeating the saying, a qualified assent must be yielded. Certainly all that *they* know about education has been known long ago.

Truth to tell, teachers trouble themselves very little about theories. So far as practical work is concerned, there is no trade or profession that stands less in need of exhortation under the text: "Not slothful in business;" yet no occupation, claiming the rank of a profession, shows less interest in the theoretical aspects of its work.

At first sight there is an air of modesty about the man who disclaims all pretensions to be an "educationist," who proudly proclaims that he is quite content to be a plain schoolmaster, whose business is to teach and not to talk about teaching. "Give me a class," says he,

"and I shall teach it. Do not trouble me about the science of education. There is no such science. Education is purely empirical."

In the dictionary, *empirical* begins with the meaning "depending upon experience, or one's own observation," but it soon works its way down to "quack."

- Closer examination shows up this modest schoolmaster as an arrogant and intolerant empiric — *empiric* is prettier than the other word. His position is summed up in whatever conclusion you may see your way to supply to the premises: "A true schoolmaster is born, not made. I do not require making."

There is a small and diminishing number of very superior teaching persons who sniff at normal colleges, and do not respect even university professors of education. Such teachers do not require the practical work of the colleges, and despise the theories of the universities. Innate ideas have in their day been regarded as something very wonderful, and innate faculties have aroused even more awe. Both must sink into comparative insignificance compared with this marvel of *innate professions*. The knowledge of education possessed by the superior ones, reached their soul by no earthly inlet. They must have brought it, after the Platonic fashion, from a former and a better world. Professor Laurie earned the gratitude of all hard-working and modest teachers on the day that he entitled those others: "TEACHERS BY THE GRACE OF GOD."

Yet to abuse those divinely certificated men here is to do a mean thing: to talk evil of them behind their backs; for none of them can be expected so far to for-

get himself as to read these pages. Such teachers are content to practise an art the principles of which they do not understand, and they haughtily resent any attempt to enlighten them. They are poor prisoners in the cave.

Leaving those few willing dwellers in darkness, let us look at the case of the many honest and earnest teachers who really do desire to get light upon their subjects and methods. At first sight there seems little to encourage such inquirers to prosecute their studies in the literature of their profession. Roughly speaking, that literature falls into two great sections. The first deals with what is usually known as school management, and is very valuable and indeed essential to young and raw teachers. But those of some experience and practical skill cannot be expected to content themselves with mere directions how to teach this subject or that. They therefore turn to the second great section, in which the books profess to deal with education as a science, and to lay down the principles on which the mere methods of school management are founded.

It is here that discontent arises. In the region of educational theory there is an intolerable lack of unanimity. Each new school brings its new theory, which contradicts all other theories. If one takes up an elementary historical sketch like Oscar Browning's *Educational Theories*, one finds the change from theory to theory so sudden as to recall nothing so much as the bewildering change of subject in reading the dictionary.

Nor is any very serious effort made to reconcile conflicting opinions. On page 312 of Quick's *Educational*

Reformers, we find in a foot-note two fables, one by Pestalozzi about two colts, the other by Rousseau about two dogs. The first fable proves that the colts, originally "as like as two eggs," became widely different through nothing but education. The second fable shows that the vast differences that ultimately mark the two dogs of the same litter who have been "treated precisely alike" are the direct results of nothing but a difference of temperament. No comment whatever is made upon the contradiction involved, except that Pestalozzi's fable is "a fit companion" to Rousseau's. Like a nineteenth-century Herodotus Mr. Quick tells the tale as 'twas told to him, and passes on to something else.

Almost every characteristic utterance of a great educationist can be matched by its contradiction in the works of some other great educationist. Nor does this state of affairs mark the dark ages of our subject. At the present moment our professional organs teem with quarrels about the merits of conflicting systems of teaching various subjects, while the two most powerful general systems of education—the Froebelian and the Herbartian—are built upon opposing philosophical principles.

Little wonder, then, that the teacher, tired of endless quarrels with no helpful outcome, should become disgusted with theories and turn his face to the wall of the cave, and be content to be called names. He thinks that there are either no general truths, no science of education, or that such general truths are not yet available.

This ignorance is not to be overcome by supplying

yet bigger and more formidable treatises on the Science of Education. For literary schoolmasters, more than any other class, have learnt the art of being dull by saying all that can be said on a given subject. It is because we live so much in the deep that Littré with the fine calm that nothing short of dictionary-making can give, dares to write:

“*Pédant*, a term of contempt, one who teaches children.”

Pedantry is indeed our besetting sin, and nowhere does it receive a better illustration than in our love of completeness. A former Professor of Theology at St. Andrews was asked how he treated his subject. The true spirit of the complete pedagogue is crystallized in the answer:

“I just begin wi’ infeenity, and go right on.”

Our present lust for a professional literature is aggravating our naturally evil tendency. Education has not as yet a very secure place among the learned professions, and writers on the subject are tempted to justify their claims by the questionable method of making their books as formal and technical as possible. One result is that ordinary practical teachers are repelled by the unnecessary difficulty and dulness of books which it would be greatly to their advantage to read.¹

¹ This seems as good a place as any to apologize to American readers for my use of illustrations drawn from my experience of Scottish and English education. To use any other illustrations would be to stultify myself. It would be a sorry commentary on the theory of apperception in teaching to quit the masses with which I am familiar in order to dabble in others over which I have no control. A Scotsman’s masses in respect of American affairs, however wide his inter-

In the following pages an attempt is made to treat the Herbartian Psychology in an interesting way, and to make some practical applications to the work of teaching. No doubt it will not be possible to make everything simple and easy, but it is hoped that no unnecessary difficulty will be added to the text in the interests of a pedantic completeness, or of an appearance of profundity. Philosophy has no longer any need to be brought from the clouds to the market-place. That work has been already well done. The humbler task remains to introduce it to the den.

The third class of idols, those of the market-place, arise from the associations of words and ideas. Bacon ranks them as the most troublesome of all. "For," says he, "men imagine that their reason governs words, whilst, in fact, words react upon the understanding."¹ Nowhere is this better seen than in works upon Education. It seems almost impossible in works of this class to speak perfectly plainly. The discourse has hardly begun when we find that we have introduced a metaphor. After that we are lost. Of a surety this metaphor will "react upon the understanding." There is no more tyrannical idol in the whole market-place than a metaphor that has taken the bit between its teeth. A metaphor shows up a system as a deed shows up a man. By their metaphors shall ye know them.

ests and extensive his reading, can never compete with masses native to the western shores of the Atlantic. American readers will therefore, I trust, pardon me, and translate, as only they can, my masses in terms of their own.

¹ *Nov. Org.*, Bk. I. 59.

Mr. Stelling, in *The Mill on the Floss*,¹ "concluded that Tom's brain, being peculiarly impervious to etymology and demonstration, was peculiarly in need of being ploughed and harrowed by these patent implements. It was his favourite metaphor, that the classics and geometry constituted that culture of the mind which prepared it for the reception of any subsequent crop."

In criticising this view, George Eliot proceeds to say: "I only know it turned out as uncomfortably for Tom Tulliver as if he had been plied with cheese in order to remedy a gastric weakness which prevented him from digesting it. It is astonishing what a different result one gets by changing the metaphor! Once call the brain an intellectual stomach, and one's ingenious conception of the classics and geometry as ploughs and harrows seems to settle nothing. But then it is open to someone else to follow great authorities, and call the mind a sheet of white paper or a mirror, in which case one's knowledge of the digestive process becomes quite irrelevant. It was doubtless an ingenious idea to call the camel the ship of the desert, but it would hardly lead one far in training that useful beast. O Aristotle! If you had had the advantage of being 'the freshest modern,' instead of the greatest ancient, would you not have mingled your praise of metaphorical speech, as a sign of high intelligence, with a lamentation that intelligence so rarely shows itself in speech without metaphor—that we can so seldom declare what a thing is, except by saying it is something else?"

When the above was written, the greatest metaphor

¹ Page 125, Stereotyped Edition.

of all, the truest and the best, but still a metaphor, had been long ago made, but was only as yet working its way slowly towards the conquest of the English mind. The plant metaphor is generally regarded as beginning with Pestalozzi,¹ and holding an after course through Froebel and his followers till now it holds the vast majority of our profession in its relentless grip. Before Pestalozzi was heard of, wiseacres told each other that "As the twig is bent, so is the tree inclined," but with him the simile passed into a metaphor, and embodied a way of regarding childhood that has become so widespread that its very opponents in attacking it are compelled to use its vocabulary.

Under all the popular words in our school-management books, words dear to the heart of every ambitious young teacher, there lurks the inevitable metaphor with its underlying theory. Many of those words imply totally different systems, yet they are all used in the most friendly way on the same page. It is only because of the power of the idols of the market-place that this happy family arrangement can be maintained. *Faculty* and *capacity* are used as interchangeable terms, though they represent psychological views that are poles asunder. *Elicit* and *instruct*, *teach* and *educate*, *train* and *inform*, all hide different and indeed contradictory views of the function of the teacher.

So much for the market-place idols in their relation to the teacher's views on his profession. Their baneful influence is felt even more powerfully in the communication between master and pupil. But as the following

¹ But see Comenius, *The Great Didactic*, V. 5.

chapters are largely taken up with the effects of those idols, we may in the meantime pass on to the fourth class.

"The idols of the theatre are not innate, nor do they introduce themselves secretly into the understanding, but they are manifestly instilled and cherished by the fiction of theories and depraved rules of demonstration."¹ Here again the schoolmaster is liable to fall an easy prey to the idols. Even the cave-dweller who has rejected the popular guides to the theoretical parts of his profession is not without his theories, and he is more than human if he keeps them from affecting his work, by modifying all the facts of school life and experience to fit into them. According as he is a Calvinist or a naturalist will he find his pupils little demons or little angels. If he be an idealist, all the phenomena of the school-room will be made to fit into the formulæ of Kant and Hegel; if a sensationalist (a much more likely supposition), the children become so many receptacles for containing the knowledge which may be poured into them through the senses.

Consider the hard lot of the teacher. If he declines to meddle with theory at all, he is condemned to the den. If he seeks relief in figurative language, he is threatened with the idols of the market-place. If he accepts a definite theory, he is charged with yielding to the charms of the theatrical idols. The only hope of escape lies in common sense. A man must know all the theories in order to choose among them. He must be clear in his use of terms lest he mislead himself, not to

¹ *Nov. Org*, Bk I §1.

speaking of others. Finally, he must make such use of the theory he chooses as his experience and intelligence direct. What follows, for example, is based on the general principles that are associated with the name of Herbart. It does not follow that the writer is a Herbartian. It is enough that he finds this system fits most readily into his own experience, and seems to him best suited to explain educational facts to others. Perhaps the best way to put it is to say that the following essays are written with a Herbartian bias, the substantive being used in its purely mechanical sense, and without that moral taint that usually accompanies it.

It may be objected that such a plan is a clear tempting of providence. To set out with a definite theory, and seek to apply it to a profession, seems very like a deliberate surrender to the idols of the theatre. One is at least forewarned, and on turning to Bacon for further information, one finds that the theatrical idols lead to error in three different directions. We are offered our choice of wandering into sophistic errors with Aristotle, empirical errors with Gilbert, or superstitious errors with people in general. On the whole, I lean towards the evil ways of Aristotle. If we must go wrong, let us at least err in good company.

Yet I am not without hope that I may not err beyond measure. To begin with, there is little fear of the *rabies biographica*. I am a Herbartian only to the extent that I cannot help it. The metaphysical basis of the Psychology that these pages seek to apply is no concern of mine, and is only introduced into the text so far as to make the system a consistent and intelligible

whole. Herbartianism has weaknesses, and some of its rivals have points of superiority of which I shall not fail to avail myself, yet as it seems to me the best system for application to education, I prefer to adopt it as a whole, rather than to form a patchwork of the best of several incongruous systems. While thus avoiding the dangers of eclecticism, I no doubt increase the risk of serious error in the direction of Aristotelian sophism. Against that error I must struggle as best I can. It may be impossible to escape altogether, but if I contrive to keep the average of error low, and to confine it pretty much to one groove, I shall be well content.

It is no part of the purpose of these pages to give an exhaustive analysis of the various kinds of idols. Such an attempt would but supply a brilliant illustration of one of them. To the intelligence of the reader must be left the classification of the idols as they are called up for examination in succeeding chapters, or as they come up in the text uncalled for and unsuspected. For one result of considering those terrible idols is the firm conviction that absolute philosophic truth is as unattainable as absolute moral rectitude. In treating of the idols of the schools, then, I cannot hope to confine myself to a mere attack, as the manner of educational reformers is. In unmasking the idols of others, I am constrained to yield to my own. In extenuation I need only say that my idols are not nearly so ugly or dangerous as those others.

It is to be hoped that this concluding remark will draw out the mild opposition it challenges. For so soon as we have reached the point of comparing idols,

we are in hopeful case. We cannot compare things till we have at least stood outside of them, if not risen above them. Your only really hopeless man is he who denies that there are idols, or at any rate that he has idols. He sits in his den enjoying his shadows, and is terrible in his scorn of all who pretend that there is something in the universe more real than those darling black puppets. Almost any means is justifiable that shall rouse this modern cave-dweller to a sense of his deplorable state. If he can be roused to defend his idols, there is every probability that in the clash of arms those idols may show themselves to be what they are.

As for the Grace-of-God teachers, they are beyond hope.

CHAPTER II.

REVIEW OF PSYCHOLOGIES

“VERBS of teaching govern two accusatives, one of the person, another of the thing; as, *Magister Johannem Latinam docuit* — the master taught John Latin.”

Thus far the Latin rudiments. When the master seeks to apply the principle in real life, he finds that he can manage his double accusative only by the possession of a double knowledge: he must know Latin; and he must know John. Not so long ago it was considered enough to know Latin. Nobody denies that the master must know his subject — nobody but Jacotot, that is, for he maintains that the master need not know even that.¹ But while all the world agrees to treat the French educationist as a crack-brained theorist for his gallant attempt to free the master from the drudgery of learning what he has afterwards to teach, no outcry was raised at the neglect of John. To know Latin was regarded as all-sufficient. John was either taken for granted or held to be not worth knowing.

¹ *Enseignement Universel: De l'Arithmétique*, p. 212, in all the glory of emphatic capitals: “Je vous ai déjà dit qu'on enseigne ce qu'on ne sait point quand on le veut.” Then on p 178, *De la Géographie*, he haughtily proclaims: “Je puis enseigner le hollandais, que j'ignore, plus rapidement que tous les grammairiens du monde réunis.”

The outcry has at last come. Popular belief and practice are changing, and John is entering upon a period in which he is likely to have a somewhat uncomfortable share of the master's attention. The person is for the first time coming to his proper place before his fellow-accusative, the thing.

• Unfortunately, the science that looks after John labours under a formidable name and a bad reputation. The very look of the word *Psychology*, with its superfluous *P*, has done something to render it unpopular. Used as an adjective, it is now enough of itself to condemn any novel. It suggests everything that is dull and unreadable. Behind it all, too, there is an underlying idea of a pompous assumption of special knowledge. To begin with, there is a difficulty in knowing exactly what it is. The very definition of the science is a battleground for opposing schools, with whose pretensions the teacher has little concern. He is a man of peace: it is not his place to fight. It is true that he is said to have won Gravelotte, but he did it by proxy. By proxy, too, he prefers to do his fighting about Psychology. It is not of vital importance to him to know the exact meaning of the study. His aim as a professional man is not to know Psychology, but to know John. From the teacher's point of view, Psychology is the study of John.

One has not to go far in this study till one discovers that John has a double personality: he is a soul and he is a body. Those two are combined in the most intimate, yet most exasperatingly complicated way. No analysis, however subtle, can accurately mark off the precise limits of John's body and soul. Yet in the

broad common-sense way in which the words are used in every-day speech there is little danger of any misunderstanding. A man who cannot clearly distinguish right away the different meanings of soul and body, is not likely to profit much by the subtleties of Psychology. To make matters perfectly clear, let it be once for all granted that this word *soul* is not here used in its narrow theological meaning, but is held to include all the higher parts of John's nature,—his knowings, feelings, wishings, and willings. So far as the body is treated as a machine, we are working with Physiology; as soon as the element of consciousness comes in, we have passed into Psychology. Naturally the next question is: What is consciousness? This is a question to be given up. No man can tell another what consciousness is, which is the less to be regretted that everybody knows without asking. Most people treat consciousness as a rather important thing, but in Psychology one is prepared for differences of opinion, and so is not surprised when Huxley in his own airy way tells us that consciousness is a mere by-product, a sort of accident, something that has no more to do with the working of the brain than a steam whistle has with the working of the locomotive.¹ Wherever Psychology differs from common sense, in the popular meaning of that term, the teacher naturally abides by common sense. He therefore has no difficulty in retaining consciousness in its high place, and making it the fundamental element in John. Every fact in John's life of which John is

¹ *Epiphenomenon* is the name that philosophers of this school hurl at consciousness.

conscious may be regarded as belonging to his soul, and is a psychological fact. But while every fact of conscious life is thus psychological, it must not be inferred that Psychology has nothing to do with what takes place out of consciousness. By and by we shall see that there is a whole class of facts out of consciousness that have a distinct bearing upon what takes place within consciousness. These are regarded as psychological facts in virtue of their influence upon the content of consciousness. In the meantime, to come to a working definition of Psychology, we may say that it is the study of the soul of John.

It is not perhaps of vital importance that we should define Psychology: it is different with John. Who or what is he? Is he the actual boy planted there, rudiments in hand, to learn a certain bit of Latin; or is he a vague abstraction, a sort of generalized boy who answers to the "male child" of the dictionary? Is he the result of subtraction or of division? Do we get him by simply subtracting him from the seventy in his class; or do we pound the whole seventy in our psychological mortar till they form a uniform mass of boyhood, and then divide by seventy? Is John a boy, or a quotient?

Is there an average John? In Physiology there can be no doubt that much good work has been done by averages. A physiologist can give a very full account of the average boy of twelve. His account must not be tested by applying it only to one boy, say our John, but to a series of boys. Thus treated it comes out all right, and is of practical use. Can Psychology do the

same? If it cannot, it is an exposed fraud. It is impossible. No doubt children differ enormously in their dispositions, but they differ no less in their bodies. The thumbs of a hundred Johns look so like each other that one might think them interchangeable, yet so unlike are they in reality that an ingenious person has suggested the general abolition of seals in favour of thumbs, and that not because thumbs are always more within reach than seals, but because their imprint on wax is always unique. All the same, Physiology has much useful information to give about the average thumb.¹

Psychology cannot help us to know this individual John who is at present conning his rudiments. It can only lay down the general principles on which John's soul is constructed, and must leave his peculiarities to John's particular master. So far from grumbling at this limitation to the power of Psychology, the master should rejoice in it; for therein lies the dignity of his calling. There can never be a teaching machine — at any rate, none but a two-legged one.

To combine the knowledge of John as an average with the knowledge of him as a boy is no doubt a little difficult. Most teachers know how it is to be done, for most teachers have had occasion, in the course of their work, to make use of a certain irritating little story entitled: "With Brains, sir."

Before calling in the aid of formal Psychology, which after all only treats John as a quotient, let us see what we can make of John as a boy. How are we to study

¹ Cf. Fr. Galton's little book, *Finger Prints*, Lond. 1892.

him? At the very threshold of our subject it is well to give up all hope of help in this study from John himself. John is of a modest and retiring disposition, having no pleasure in the process of being interviewed. Even an infusorian is not quite his natural self under the fierce light that beats upon the stage of a microscope. It is not to be wondered at, then, that as soon as he knows himself to be under observation, John ceases to be himself. He becomes a new boy: he plays his part as bravely as his seniors.

Yet the method of direct observation is too valuable to be thrown aside, and as the microscopist seeks to modify light, temperature, fluidity, and what not, to induce the trifling specks of protoplasm on his stage to feel at home and act accordingly, so must the teacher seek to put the pupil at his ease, and examine him when off his guard. Many teachers thus study their pupils, and are content to go no further. To this class, too, belong such observers as Perez, Preyer, Darwin, and the "father" in Sully's *Studies of Childhood*, who have all made elaborate observations of children at the very earliest stages. The general value of those observations has yet to be established,¹ but the special value to the parents and teachers of the children in question is immediate and unquestionable. Educationists who are keenly alive to the danger of generalizing on such narrow basis seek to attain to greater accuracy by widening their observations so as to include whole classes of subjects.

¹ Mandsley has no patience with any other psychological method. *Vide Body and Will*, p. 89, note.

They adopt the method of what is called Anthropometric Registration, in which all the essential measurements of each child's body are accurately and regularly recorded. In addition to the mere size, all manner of interesting particulars may be noted. Tests of all kinds may be applied. Sight tests, ear tests, weight tests, are quite common, and new instruments are being added to the paidological departments of the colleges to carry the testing still farther. In the laboratory of the school of Pedagogy of New York, for example, we are told in the *New York Times* that two new instruments have been introduced. The algometer is an instrument for measuring a child's ability to stand pain, and his general sensitiveness. Then there is a beautiful machine for testing nervousness and emotional sensibility in children, called the plethismograph.

By and by John will have some chance of attending to Pittacus' recommendation "Know thyself"; for he will come home from school with all the necessary material neatly set down in black and white decimals in his annual report card. Yet, after all, the result of this direct observation is only the beginning of knowledge. It is no doubt essential as a foundation, but upon it must be built by different methods the true John that we seek to know. Practical teachers, like practical men of other professions, are very fond of praising the result of direct observation, and depreciating in a corresponding degree the information derived from reflection or from books. But in this case at least there is little ground for that absolute certainty which is assumed to be the characteristic of sense observation. We cannot

observe John's soul; we can only observe his body and interpret his motions in terms of what goes on within ourselves. We feel thus and thus, and accordingly act in a certain way; John acts in this certain way, therefore he feels thus and thus. There we have the typical argument on which sense observation depends for whatever authority it may possess in Psychology.

To this process of interpretation little objection need be raised, so long as it is only applied to persons whose circumstances are identical with those of the interpreter, or nearly so; but the farther we go from this condition, the less reliable does the process become. The circumstances of John and his master are notoriously unlike, with the result that the master's interpretations of John's actions are not always quite accurate. Huxley tells us that the only way to know how a crayfish feels is to be a crayfish.¹ It may be said that the master's case is not quite so desperate as the biologist's, for the master *has been* a boy, and he can remember how he felt and acted then. No doubt the master can to some extent reproduce his boyish experiences, and if proper means are taken by supplying concrete aids, such as books he used to read and instruments he used to handle, he may attain to a really valuable revivifying of past times. Let the master make as full a biography of himself as his memory will supply materials for; then let him make as full a collection of books, toys, and other childish properties as time and the bump behind his own ear have spared. Finally, let him consult some aged female relative and by her aid construct a chronological table to accompany

¹ International Scientific Series: *The Crayfish*, p. 89.

his biography, and he will be somewhat astonished at the result. Generally speaking, he will find that he had thoughts at five and six that he never credits his infants with. No teacher who has not tried this method can guess what a revelation it will prove. Yet, after all, the enormous difference thus shown between our present and our former thoughts only makes clearer the difficulty in ever really bridging over the gulf that separates the man from the child. At his best the man cannot recall the past without reading into it a great deal that belongs to a period subsequent to that supposed to be recalled. It is as impossible for us mentally as it is physically to become boys again. In spite of our most vigorous abstraction, we read some, at least, of our present into our past.

If students in training for the profession of teaching could by any chance win an answer to Elizabeth Akers Allen's prayer —

"Backward, turn backward, O Time, in your flight;
Make me a child again, just for to-night!"

they might well dispense with the hours that wise councils insist upon their spending in the practising schools connected with their college. But even the poetess herself had little hope in her prayer. The teacher must look elsewhere for help.

There is a cheerful little story, resting upon doubtful authority, which tells how a progressive and enterprising power in the far East sent certain high officials to England to pick up various bits of civilization that those Orientals thought would be highly desirable at their end

of the world. In particular, those officials were enjoined to discover the most civilized thing in religions. As they wanted a genuinely high-class article, a religion that would really work, they were recommended to apply to a certain professor at Oxford who had made religions a specialty, but who was greatly scandalized at this too practical application of the principle of Comparative Religion.

Practical teachers look upon Psychology in pretty much the same light as the Japanese representatives looked upon religion. What they want is a Psychology that will work. As human beings, such teachers may be interested in Psychology as a branch of general culture; as teachers, they treat it as a means towards an end, and if the truth must be told, they regard it as on the whole a very ineffectual means towards that end. There is no more common criticism of a work on *Psychology for Teachers* or *Mental Science as Applied to Education* than that Psychology and education are like oil and water—they will not mix. To be sure, in most school-management books they do not get the chance. All the Psychology, such as it is, is gathered into a few preliminary pages, and is carefully kept to its place there under the disparaging name of *Theory*, while the rest of the book swells out into a totally unwarrantable size under the respect-commanding title of *Practice*. Teachers are treated haughtily by philosophers to statements which may or may not be true, but which are certainly not adapted to practical application to teaching. We have worked too long on the beggarly principle that teachers must not be choosers. There is a sort of feel-

ing abroad that education is utterly dependent on Psychology for any social standing it may possess. John is John, and Psychology is his only exponent. To interfere with Psychology is therefore to lay sacrilegious hands upon the very ark of the nature of things, to kick against the pricks of the eternal verities. We cannot change John by quarrelling with Psychology; let us therefore thank the psychologist for the crumbs of information he may throw to us, and spend all our efforts in seeking to make the most of them in our practical work.

But there are Psychologies and Psychologies, and some of them are better suited to our purpose than others. There may be a one true and living Psychology before which all the rest must bow, but in the meantime it has not made good its claims. The pursuit of this true Psychology is no doubt a very important work, but it is not the work of the teacher. As practical teachers, we do not ask from Psychology a statement of metaphysical truth; we want rather a system which can explain all the known mental facts in such a way as to render them available in education. In short, we propose to treat the various schools of Psychology as so many hypotheses — which, after all, is probably not far from the truth — and to select that school which promises to be most useful in meeting our needs. We shall then pass in review before us the various systems with the deliberate purpose of selecting that which suits our purpose.

To begin with the most rudimentary, we have Count Tolstoi's experiment at Yasnaya Polyana, his estate near Tula. Here we have a sort of *ab ovo* Psychology. The

Count begins at the very beginning, without bias or theory—just as so many teachers take a pride in doing; and, like them, learns with great labour and pain what any educational psychologist could have told him in five minutes. Tolstoi's main principle is practically an application of Spencer's doctrine that all true study must be pleasant. At Yasnaya Polyana no child is to be compelled to do anything. Tolstoi depends on the inherent goodness of humanity. Each child is a law unto himself. This is how it works. Tolstoi himself speaks.¹

"The teacher goes into the room and finds the children rolling and scuffling on the floor, and crying at the top of their voices: 'You're choking me! You stop pulling my hair!' or 'Let up: that'll do!'

"'Piotr Mikhailovitch,' cries a voice from under the heap, as the teacher comes in, 'make him stop.'

"'Good evening, Piotr Mikhailovitch,' shout the others, adding their share to the tumult.

"The teacher takes the books and distributes them to those who have come to the bureau. First those on top of the heap on the floor, then those lying underneath, want a book.

"The pile gradually diminishes. As soon as the majority have their books, all the rest run to the bureau, and cry 'Me one, Me one!'

"'Give me the one I had last evening!'

"'Give me the Koltsof book!' and so on.

"If there happen to be any two scufflers left struggling on the floor, those who have taken their places with their books shout: 'What are you so slow for? You

¹ *The Long Exile, etc.*, p. 284 (Dole's Translation, Walter Scott).

make so much noise that we can't hear anything. Hush!' The enthusiastic fellows come to order; and, breathing hard, run after their books, and only for the first moment or two does the cooling agitation betray itself in an occasional motion of a leg.

"The spirit of war takes its flight, and the spirit of learning holds sway in the room. With the same enthusiasm with which the lad had been pulling Mitka's hair, he now reads his Koltsof book—thus the works of Koltsof are known among us—with teeth almost shut together, with shining eyes, and total oblivion to all around him except his book. To tear him from his reading requires fully as much strength as it required before to get him away from his wrestling.

"The pupils sit wherever they please—on benches, chairs, on the window-sill, on the floor, or in the arm-chair."

But to what end continue with the struggle for the arm-chair, the deliberate departure of the whole school during school hours, and the hundred other experiences that produce the ridiculous mouse of conclusion—for the Count gains from his experiment the net result (1) that children like stories much better than lessons, and (2) that peasant children may tell better stories than Tolstoi himself. Yasnaya Polyana is not likely to affect seriously the future of the new education.

If Tolstoi's methods show Psychology in its crudest forms, we have only to turn to the psychophysical school to find a corrective. To Fechner belongs the honour of founding this school, which professes to reduce Psychology to an exact science. It is true that Herbart

anticipated his pretensions by founding a Psychology upon Mathematics, but for practical purposes Fechner's was the first real attempt to introduce exact methods into Psychology. That the subject treated in Fechner's book (published in 1860) is a science no one will deny; that his methods are exact is beyond question. The only trouble is that his subject is not Psychology. Had his *Psychophysik* contained a preliminary erratum note "In this volume, for Psychology read Physiology," there would have been nothing to object to in his system. He has taught us a great deal about the nature and speed of nervous reaction; his only mistake is in thinking that his experiments on matter can be simply interpreted in terms of mind.

While this pseudo-psychology with its tape-lines and chronographs, its algometers and plethysmographs, can do little for us in the way of rational explanation of educational principles, it is of great value to the teacher. Physiology is almost as essential to the Art of education as Psychology is to the Science, so we need not be surprised that many practical hints may be got from a study of Weber's Law, and the other generalizations to which psychophysics have attained.

Bain and Spencer write on Education with a psychophysical bias, but both are too clear-headed to be blinded by the glamour of a perfectly symmetrical system. After reading Fechner and his disciples for a little, one is tempted to think that all one needs is a painless way of trepanning the children so as to get at their brains with our reagents and instruments. A little pressure here, a gentle stimulus there, and the

work of seven years is done in a few minutes. It would be so much pleasanter for all parties than the present deplorable guessing and experimenting from the outside.¹

While no one has yet suggested this coarse interference with the physical basis of mind, a daring young French psychologist has taken a step in this direction. Guyau, in his *Education and Heredity*, has practically taken up the position that one of the most striking discoveries of the psychophysicists should be applied to the actual work of teaching. Hypnotism can no longer be regarded as the mere material of an eighteen-penny show. It is now treated seriously by our best psychological writers, and now that a respectable authority has seen fit to introduce it into educational discussion, the time has come to speak of it without the preliminary smile or sneer to which it is accustomed.

¹ There is something grewsome in reading, for instance, of "the psychic action of coffee." Cannot we even have breakfast in peace, without elegantly expressed but terribly depressing remarks on coffee as "an intellectual poison"? To be sure, we have the comfort of learning that while itself a poison, this part of our breakfast is an antidote to another poison — opium. A recommendation that counts for more in the mind of a Scotsman is that this beverage is "un aliment d'épargne." It appears that it decreases the development of carbonic acid in the system, and thus plays the part of damper. But, on the other hand, this has the effect of stimulating the will, without in the same degree stimulating the imagination or the general power to work, which is certainly a very unsatisfactory state of affairs. We would at once forswear coffee forever were it not that, a couple of pages further on, we are told that nearly the same things apply to tea and cocoa. We close the book hurriedly, and rejoice that psychophysics is as yet in its infancy. See Richet, *L'Homme et l'Intelligence*: Les poisons de l'intelligence, p. 144.

You are not to suppose that Guyau proposes to set off the whole school into a hypnotic trance, and then mould the passive minds into knowledge. Scientific psychophysicists have now made up their minds that hypnotic suggestion^a may act without the formality of the trance, and what Guyau wants us to do is to apply this principle in dealing with our pupils. If he is to be believed,

“They’ll take suggestion as a cat laps milk;
They’ll tell the clock to any business that
We say befits the hour.”

The whole subject is yet too much in the clouds for us to form very definite conclusions; but it is surely of the utmost importance that we as teachers should know that such matters are being discussed. There are timid spirits among us who are inclined to think that the less said on such subjects the better. But it is well to remember that in all probability every teacher to-day, in this practical land of ours, does make use of hypnotism. What is the meaning of that mysterious power that every good teacher exerts over his pupils? Above all, what is the meaning of that *Sympathy of Numbers* that we hear so much of in our school-management books, and to so little purpose? There certainly is more in our every-day work in school than is dreamt of in the philosophical introductions to our school-management books. But while it is well to keep our minds open to all sources from which truth may come, it is evident that the Suggestion school is not yet in a position to make practical recommendations, much less to set up a Psychology that shall enable us to arrive at a true know-

ledge of John — of John, at any rate, in the usual robust health in which we are accustomed to see him at school. In an article on "Artificial Modifications of the Character in Somnambulism,"¹ Guyau seeks to point out the usefulness of such processes in education, but he is driven to make the honest reservation "*at least in the morbid state*."

It is time now to come to the Psychology that actually holds the field among us. There is a popular belief that Locke is dead, that his system has had its day, that it did capital work in its time, and that it has now given place to better things. Philosophical writers are not unfair to Locke. They admit that we are higher than he only because we stand upon his shoulders; but they regard him as none the less dead for that. We do not at all question the accuracy of the biographer who tells us that "The tomb of Locke may be seen on the south side of the parish church of High Laver, bearing a Latin inscription prepared by his own hand." We would only add that the Latin inscription might well have quoted the threadbare "*Non omnis moriar*," for Locke was never so much alive as he is to-day. Almost every philosopher who writes a book feels compelled to dispose of Locke first: he seems unable to get to his own theory save over the prostrate form that lies on the south side of that parish church. Though they spend all their introductory chapters in showing how Locke went wrong, philosophers do not seem able to get along without him.² They go farther: they even seem to

¹ *Revue Philosophique*, Avril, 1883, p. 433.

² Herbart himself seems to be no exception. Ribot, speaking of Herbart's ideas being so much in advance of those prevalent in the

like him. It is no small matter to draw from a psychologist a sentence so nearly tender as "Locke says in a memorable page of his dear old book."¹

Powerful as he is amongst professional philosophers, it is among the great mass of the non-professional philosophers that Locke is most influential—among teachers in particular. Teachers suck in Locke from the introductions to their earliest school-management books; they pore over him and his critics from the time that they enter college till the fatal day on which they chalk up the pathetic word *Ichabod* on the college doors, and make their way out into the world, there to carry into practice the Locke they have learned—and all this, in many cases, without having more than heard the name of Locke.

For Locke's influence far exceeds his fame. Most of his followers do not know their master. His point of view coincides so completely with that of the ordinary intelligent man in the street, that his following in all English-speaking countries is infinitely greater than any other philosophical writer can command. It has been said that every child is born into the world either a little Platonist or a little Aristotelian. This may be true of the rest of the world, but wherever the verb *cogitare* is translated by the words *to think*, there every child is born a little Lockian.

metaphysic-ridden Germany of his time, says: "J'incline à croire, pourtant, qu'elles avaient été suggérées à Herbart moins par ses propres réflexions que par la lecture de Locke."—*La Psychologie Allemande Contemporaine*, p. 4.

¹ James, *Principles of Psychology*, Vol. I., p. 679.

Locke then fairly claims our attention with every chance of winning our final approval, though the reader well knows that Locke will after all turn out to be only a goodly Eliab brought in to give place by and by to some stripling of a German David. This process has become habit and repute in writing of this class; for Locke shares with Mr. Herbert Spencer the unenviable rôle of the Aunt Sally of Philosophy. No work on Philosophy is complete without a preliminary refutation of Locke, and an up-to-date sneer at Mr. Spencer. The living philosopher is particularly able to defend himself, and the dead one needs no defence; he only requires to be understood. He may be wrong, in fact he must be wrong, since the whole world who writes is unanimous on the point; but he is honest and fair above most men, and, for a philosopher, eminently clear.

His method commends itself to us by its practical common sense, its lack of any assumption of superior private knowledge, its determination to take nothing for granted. There is a useful little book called *Inquire Within upon Everything*. This title might with great appropriateness have been adopted by Locke as the motto of his great work *The Essay on the Human Understanding*. "I can no more know anything by another man's understanding, than I can see by another man's eyes," says Locke. Therefore he maintains that the only way to get at the meaning of knowledge is to inquire within his own mind. Introspection, looking within, turning the mind inwards upon itself,—these are the names of a process that has always commanded the fullest confidence of English and Scottish and even American phi-

losophers. "Seeing is believing" is as satisfactory to introspective philosophers as it could be to Martin Tupper himself. If I look into my mind and find certain things there, I know them to be there. And whatever I cannot find there, I do not know to be there. Observe that the introspectionists do not say that because they cannot observe a certain phenomenon in the mind, that phenomenon is not there. All they maintain is that they do not know it to be there. Whatever may be the faults of this school, unfairness is not one of them. It claims not an inch beyond what the sternest logic will allow. The radical defect of the school is very obvious, very simple, and quite irremediable. When the mind is turned back upon itself, it can never see the whole of itself. There must always remain the part seeing and the part seen, yet to know the mind as the introspectionists seek to know it demands that it should be all seen at once.

Introspection cannot fulfil its own conditions; it obviously requires to be helped to attain its end. So far as it goes, it is admirable, and it goes a great way. Yet it breaks down at a very important place. By looking into our minds we may see pretty clearly what they contain; we may note from time to time the rapid passage of ideas causing a complete change in the content of the mind. What we cannot well observe is the mechanism by which such changes are effected. The introspectionists, so far from explaining this mechanism, hardly seem to realize very clearly the distinction between the contents of the mind and the laws according to which these contents are developed and modified. No doubt philosophers are ready to step in here and point out that Hume

at least recognized the distinction, and to give an abstruse disquisition in which Hume's "natural relations" are proved to correspond to the content, while his "philosophical relations" stand for the mechanical elements.¹ But a Philosophy that requires so much explanation is of little use to us; we want one that says plainly what it means in matters in which we are professionally interested.

By the time John comes to school he has what are known as ideas. It may be supposed that he has not many, and that what he has are not of much consequence. As a matter of fact, he has acquired more first-hand ideas before he comes to school than he acquires during all the remainder of his life. In any case he has ideas, and these must be reckoned with.

At this point I cannot do better than in the words of Locke: "Beg pardon of my reader for the frequent use of the word *idea* which he will find in the following treatise. It being the term which, I think, serves best to stand for whatsoever is the object of the understanding when a man thinks, I have used it to express whatever is meant by phantasm, notion, species, or whatever it is which the mind can be employed about in thinking; and I could not avoid frequently using it.

"I presume that it will be easily granted me that there are such *ideas* in men's minds. Everyone is conscious of them in himself; and men's words and actions will satisfy him that they are in others.

"Our first inquiry, then, shall be how they came into the mind."²

¹ G. F. Stout, *Mind*, 1889.

² *Essay on the Human Understanding*, Bk. I., Chap. I.

This last sentence lets slip the hounds, and starts the grand tally-ho for ideas. Where did John get those ideas that Locke says we cannot deny that John possesses? Were they waiting for him when he came into the world, or did he bring them with him from the shores of that great unknown whence he came? Did they grow in him as the cells of his brain grew, or are they stuffed into him like his rusks and arrowroot? On the whole, the stuffing theory is most popular with people in general, and with teachers in particular. Descartes' theory that ideas are born along with John has never recovered from Locke's attack. Plato's theory of reminiscence, that maintained that John's ideas were only the memories of a previous existence, was never more than a poetical myth. Scientific men cannot satisfy even themselves with the theory that ideas are a sort of morbid secretion of specially modified protoplasm.¹

Locke, on the other hand, exactly met the wants of his practical fellow-countrymen, with his theory that the mind is a sort of idea-box, into which the senses admit as many ideas as are good for us. His theory is not in its elements new, since it consists in the application of a principle widely recognized among the Schoolmen: "*Nihil in intellectu quod non fuerit prius in sensu.*" The mind gets all the ideas through the senses. It is a sort of blank sheet of note paper on which the senses write. The mind, however, is not quite passive; it has the duty of combining and ar-

¹ Cf. Cabanis' famous statement that the brain secretes thought as the liver secretes bile.

ranging the ideas supplied by sense. It is here that the critics begin to enjoy themselves. They point out that Locke's *mind* is sometimes active, sometimes passive, as the needs of his theory vary, and, further, that a whole class of ideas are in a sort smuggled into the mind. They freely admit that John can get the idea of *red* in no other way than through the sense of sight. But how the mind passes from this idea of *red* to that of *colour* is what the critics are anxious to know, and what Locke fails to explain. In other words, Locke is quite clear about the mere content of the mind, and knows that there is a mechanism; but he makes no serious attempt to discover how this mechanism works. He knows the idea *red*, and the idea *colour*, and he knows that somehow or other the one arises out of the other; but beyond endowing the mind with a *faculty* for this sort of work, he leaves the change unexplained.

This is not to be wondered at when we remember that Locke and all his school regarded the action of the mind as limited to a series of successive states. For him, and for the whole associationist school, the mind was a sort of hour-glass.¹ The upper bulb was filled with ideas that were out of consciousness, but were on their way into it; the lower bulb was filled with ideas that had just passed out of consciousness. No idea was in consciousness save when it was passing through the narrow neck from the one bulb into the other. This conception of the mind leads to endless difficulties, which are seen with greater or less clearness by all the

¹ The associationists, of course, do not use this figure; but I do not think I am unfair to them in making it.

school, and which are met by more or less ingenious devices. In Dr. Thomas Brown,¹ for example, the difficulty is so keenly felt that he practically admits the coexistence of several states in the mind, but is very careful to maintain his consistency by asserting that this coexistence is only "seeming."

We are not at all concerned to defend the associationists, or to help them out of the difficulty into which their principles have led them. We leave Locke with regret, thanking him for what help he has been able to give us, and turn elsewhere to see what other systems can offer. If our aim were to find out John's true place in nature, and to explain him as a phenomenon viewed from the standpoint of eternity, we could not do better than throw in our lot with the school of idealism, as it is called. This, however, offers more a system of Metaphysics than a Psychology, and a Psychology is good enough for us as teachers.

Education has not been able to escape the all-pervading force of this idealism, and two of the greatest men on our roll of educators owe much of their inspiration to its influence. Of the two founders of the Froebelian school, Pestalozzi was probably the greater man, while Froebel was the greater philosopher. This is not, perhaps, very high praise; for, truth to tell, neither was very distinguished in this direction. Yet obscure and confused as are Froebel's philosophic utterances, they undoubtedly embody the spirit of German idealism.

¹ *Philosophy of Human Mind*, Lecture 45, p. 290: "In itself every notion, however seemingly complex, is and must be truly simple, being one state or affection of one simple substance, mind."

The doctrine of the organic unity of the universe underlies all his theories, and cannot be neglected in considering his principles unless we are prepared for meaningless confusion.

The usual criticism of this idealism as a system is that it deals with such wide and universal principles that there is a danger that universality is gained at the expense of content; that the principles become empty formulæ which lose hold of the facts they profess to explain, and present a specious harmony by the simple expedient of omitting inconvenient facts. The idealist's difficulty, like the clergyman's, is usually in the *application*.

Froebel is no exception to the rule. In the *Education of Man* we have beautiful, if obscurely expressed, truths about education. In the kindergarten we have clear, cut-and-dry, consistent principles. But the kindergarten cannot be evolved from the *Education of Man*. Between the two there is a great gulf fixed, a gulf that Froebel has not bridged.

The universe is an organic whole, in which all things must work together for good. Every animal, person, place, or thing has its allotted position and work in this rational universe, and can only fulfil its function by being true to itself, consistent with its own nature. John must develop, and that according to fixed laws. What those laws are can be discovered only by learning the course of nature. Find what nature wills, says the Froebelian, and do that. John must develop according to the laws of his own nature; his development must be self-development, development from within. Before, therefore, we can educate John, we must know him.

Here we have stumbled upon the radical difference between the old education and the new. No doubt the change from Latin to John was at least suggested by Rousseau in *Émile*, but to the Froebelian school belongs the glory of the advance. Pestalozzi began, and Froebel developed, the study of child-nature as a key to education. The words on Froebel's tomb "Lasst uns unsern Kindern leben," are usually translated "Let us live for our children." But they have been rendered, and some prefer the reading, "Let us live with our children." The first embodies the spirit of the law of child-study; the second expresses its very letter.

Unfortunately, the way to know John is not suggested. Since the whole universe is a rational organism, it follows that if we know how that organism works, we know exactly how to educate John. But to exhaust the universe seems a somewhat tedious way to get at the information we want. The Froebelians do not face this rational outcome of their principles; they content themselves with a metaphor. The child is a plant. Once the Froebelian has said this, he has uttered the shibboleth of his school. Thereafter he is content to take his place as a humble under-gardener, and watch with interest and admiration the development of John. Education becomes, in the very words of the master, "a passivity, a following." The natural outcome of those principles is a general paralysis. Education becomes a great mystery.

Froebel is at once worse and better than his principles: worse, inasmuch as he has failed to correlate theory and practice; better, inasmuch as his practice

is not the paralysis to which his principles would lead him. He does not carry his philosophy far enough to demonstrate the possibility of what is called education in an organic universe. If John must develop according to fixed laws, if John must be self-determined, what work is left for the teacher? Yet this enforced "passivity" is not allowed to degenerate into inactivity. The master's work is reduced to a "benevolent superintendence," no doubt, but it is wonderful how much can be read into such a phrase. Even the plant metaphor is not quite such a restriction as at first sight appears. It leaves the teacher all the rights of pruning, and grafting, and even transplanting. At a pinch, corporal punishment itself might be smuggled into the kindergarten, and be justified by the case of the *walnut tree* in the old Warwickshire couplet:—

"A woman, a dog, and a walnut tree,
The more they are beaten, the better they be."

It is to be noted that Froebel's failure to correlate his theory and his practice by no means proves that either theory or practice is wrong. To me, each in its own place seems eminently satisfactory: the Hegelian doctrine as a philosophical explanation of the universe, and the kindergarten practice as a school method. The objection is that there is no Psychology in the system at all, other than mere external observation of John. To call him a plant does not advance matters much, and manifestly does not account for the use of cubes, spheres, cylinders, and bricks in the very precise way the kindergarten demands. In truth, Froebel's

system as a practical school method is purely empirical. The fanciful, quasi-philosophical way in which he seeks to explain the relation of angles and sides, of forms of knowledge, of beauty and of life, and of the moral meanings of certain physical phenomena, is charming, but amounts to nothing more than a pretty mysticism.

Not Philosophy, but common sense, experience, and loving observation have led Froebel and his followers to adopt certain apparatus and certain methods which are excellent in themselves, and which in capable hands produce admirable results. For this he deserves all the honour that has been heaped upon him — *but he has not explained John.*

The mere fact that Froebelianism has obtained such a hold upon our educational system proves that it possesses elements of first-rate importance to the teacher. But as a Psychology it is simply non-existent. It suggests the immense importance of knowing John ; which is much. It leaves to others the task of supplying this knowledge.

Once more on our travels in search of information about John, we turn quite naturally towards Germany ; for, like so much else that is well worth having, most of our educational theories are made in Germany.

It is true that the disgrace supposed to attach to this brand is somewhat modified in the case of education by the fact that we have at least the skill to apply the theories to our own conditions ; in applying them in a new environment we make them our own. In some respects we make a better use of imported theories than did the founders of those theories. Herbartianism is

at least as vital a force in the United States at this moment as it is in the Fatherland.* There is a Herbart Club of altogether abnormal activity. Herbartian literature is springing up in almost alarming luxuriance. Even in conservative England teachers are becoming alive to the importance of this new light, — a sixty-year-old torch is still a new light in educational matters, — and as this is the light in which we hope to make John known, we must introduce Herbart in a new chapter.

CHAPTER III

THE HERBARTIAN PSYCHOLOGY

JOHANN FRIEDRICH HERBART was born in 1776, and died in 1841. He has no history. Philosophers seldom have. It is a compensation.

Many teachers seem to have the vague notion that Herbart is a sort of continuation school edition of Froebel. Kindergarten for the lower classes, Herbartianism for the higher. Even professed Froebelians do not seem to be quite aware that Herbart, so far from supporting their position, is directly opposed to it. No doubt many of the practical recommendations of the two systems are the same, as is natural. We shall see later, too, that from the broad platform of Hegelian optimism we may ultimately reconcile the antagonism. But as matters stand, Froebelian and Herbartian principles, as understood in a plain, common-sense way, are diametrically opposed to each other.

So absolute is the opposition that it cannot be more fitly described than by adopting the comparison by which Kant emphasized the gulf that separated his system from those that preceded it. The change he compared to the advance from the Ptolemaic to the Copernican conception of the solar system. The standpoint is not only different, it is exactly the contrary of what it was before. From the earliest times philoso-

phers have been racking their brains to explain how the mind manages to *make* ideas, or *find* ideas, or *contain* ideas, or *combine* ideas. In the problem the mind was always "given." It was the one thing in the universe of which the philosophers were sure. "Cogito ergo sum" is but one of a series of ways in which this truth has been expressed. The trouble always began about ideas.

To all this Herbart supplies us with a pleasant variety. He starts with the ideas, and the hunt is now for the mind. We have failed to explain ideas by the mind; how about explaining the mind by ideas?

You are not to suppose that this is exactly how Herbart puts it. Herbart is a philosopher—a German philosopher. The change of standpoint is none the less real for that.¹

It is true that he starts with a mind, or, as he prefers to call it, a soul. But do not fear that the sport of the hunt is to be spoiled for that. This "given" soul is no more a real soul than it is a real crater of a volcano. It has absolutely no content. It is not even an idea trap: ideas can slip in and out of it as they please, or, rather, as other ideas please; for the soul has no power either to call, make, keep, or recall an idea. The ideas arrange all those matters among themselves. The mind can make no objection.

"The soul has no capacity nor faculty whatever, either to receive or to produce anything.

¹ Th. Ribot, in his *La Psychologie Allemande Contemporaine*, says that with Herbart the *moi* ou *la conscience*, in plain English the Herbartian *soul*, "n'est què la somme des représentations actuelles. Bref, elle est un effet et non une cause, un résultat et non un fait primitif." — p. 24.

"It is therefore no *tabula rasa* in the sense that impressions foreign to its nature may be made on it; also, it is no substance in Leibnitz' sense which includes original self-activity. It has originally neither ideas, nor feelings, nor desires; it knows nothing of itself and nothing of other things; further, within it lie no forms of intuition and thought, no laws of willing and acting; nor any sort of predisposition, however remote, to all these.

"The simple nature of the soul is totally unknown, and forever remains so; it is as little a subject for speculative as for empirical psychology."¹

It is here that Herbart has the advantage of Locke. The English philosopher got rid of innate ideas, but he could not free himself from innate faculties. What Locke did for innate ideas Herbart did for innate faculties.² Burdened by his assumption of successive states, Locke could not get his ideas to work upon each other in order to produce complex actions and reactions. He was therefore driven to invent or assume certain powers of the mind which he called *faculties*, and which were credited with all the work that went on within the mind. When a certain process was discovered, by the act of introspection, to take place in the mind, Locke

¹ Herbart's Psychology is set forth in two works, — a large and not very difficult treatise, *Psychologie als Wissenschaft*, and a smaller and more difficult, because more condensed, *Lehrbuch zur Psychologie*. Our references are always to the latter, as being more convenient. The above passage is to be found in Part III., §§ 152, 153.

² It is true that Leibnitz was by implication first in the field, but what he implies by his "a naked possibility is nothing" is clearly stated and worked out by Herbart.

and his followers gave this process a name, and then assumed a faculty corresponding to that name. A certain process called abstraction is discovered to go on within the mind. This gives the introspectionist no trouble. It is only a matter of baptizing another faculty, and we have the "faculty of abstraction." Against this short and easy method Herbart made a vigorous protest, and swept away forever from his Philosophy the whole brood of faculties.

Thus suddenly deprived of our faculties, we are naturally somewhat anxious to see how we are to get along without them. Herbart does not leave us long in suspense. What he has taken from the soul he has transferred to the ideas. These are no longer the mere passive material on which the faculties act; they have a vitality all their own,¹ indeed, apart from them there is no vitality in the soul at all. With Herbart the soul is assumed to be perfectly simple and homogeneous, its only power being a vigorous *vis inertiae*.² Left to itself, the soul would never change at all. This is an obvious assumption for which most of Herbart's followers are inclined to apologize. Educational writers who base their ideas on his usually pass very lightly over this part of his Philosophy, if indeed they mention it at all. But as the use of hypotheses is one of the essential points in which he differs from the introspectionists, it ought rather to be insisted upon. No doubt this particular hypothesis is of no great moment. Herbartianism could still be a force in education without it. Yet for a complete understanding of the mechan-

¹ *Psychologie*, Part I. 10.

² *Ibid.*, Part III. 152.

ism by which Herbart makes Psychology consistent with itself, we must consider it.

This simple and homogeneous soul is not left to itself, as it would like to be. It is attacked by the one set of forces that can have any effect upon it. Nothing but *ideas*¹ can affect the soul, and even when attacked by them it does not rouse itself up to independent action; it only reacts upon the presented ideas. Once the soul has reacted upon an idea, it can no longer be the same soul that it was before. It resists change backwards as vigorously as it resists change forwards. It reacts differently upon the next idea that presents itself, because of its previous reaction upon the first. It is obvious that, on this view, the soul sinks into comparative insignificance compared with the ideas. The ideas really make up the mind.

¹ This familiar word seems best suited to represent the Herbartian *Vorstellung*. "State of consciousness" (Ribot) is accurate, but cumbersome. "Concept" implies a theory that Herbart does not hold. "Presentation" (Stout) is perfectly accurate so far as it goes, but it has the same defect as *idea* itself, — it limits the meaning too much to the merely cognitive side. No doubt this is an error in the right direction, for while *Gemuth* is distinguished from *Geist* (*Psy.*, Part I. 33), we are told "*Das Gemuth aber hat seinen Sitz im Geiste, oder, Fühlen und Begehren sind Zunächst Zustände der Vorstellungen, und zwar grossertheils wandelbare Zustände der letzteren.*" We may, therefore, safely retain the ordinary English word, especially as we have the authority of Dr. W. T. Harris for the following: "*Vorstellung* means image, or concept, or representation, or presentation — in short, any and all mental products included under the English word *idea* in its widest application."

In the light of the above note the distinction of the terms *soul* and *mind* as used in the text will be clear: *mind* is used where the cognitive aspect is predominant, *soul* when the whole *Wesen* is implied.

The soul is regarded as little else than the battleground of contending ideas.

For, according to Herbart, the ideas are always competing with each other for a place in the soul. But all places in the soul are not of equal value in the eyes of an idea. To use a somewhat gross comparison, the soul may be regarded under the figure of a dome, the summit of which is the goal of the ambition of every self-respecting idea.¹ The summit is certainly the best place, but anywhere within the dome is good, and the nearer the summit of the dome the better. When an idea gets low down in the dome near the base, it becomes dim and languid, and the nearer the base the more languid, till on the base it gasps for a while, and then either rises to higher and happier levels, or sinks beyond the base altogether into the limbo of unconsciousness.

The base of the dome which separates the realms of light and life from the nether regions, where the ideas gnash their teeth, is called the *threshold*. Naturally we want to know on what principle some ideas maintain their place within the dome, while others sink below the threshold.

The first time an idea passes the threshold into the dome, his chief care is to make acquaintances — useful

¹ Herbart must not be held responsible for the figure of the dome. He generally contents himself with plain unfigurative language on this point; an idea is simply in the soul or in consciousness. I have adopted the dome merely as a kind of shorthand expression, and not as implying any sort of theory. It is particularly to be noted that it has nothing whatever to do with the Vaulting and Tapering — *Wölbung und Zuspitzung* — referred to in *Psychology*, 26, d.

acquaintances. For his only chance of gaining a footing within the dome is by making suitable connections.

His conduct therefore is strikingly like that of an ambitious young man on his introduction into society. He finds there ideas akin to himself, with whom he easily forms fast friendships; but on the other hand he encounters certain ideas utterly opposed to his style, and these do all in their power to expel him. An idea's first visit to the dome seldom lasts very long. He has few friends and many enemies; he soon sinks to the threshold, and passes out into a longer or shorter exile.

While there is thus among those ideas as much intriguing for introductions, as much clique-making and log-rolling as in any drawing-room or newspaper office, there is this very important difference. Those ideas are loyal to each other. As soon as one of them has crossed the threshold into the sunny land, his first thought is naturally to make for the summit; but his second is invariably to drag with him those with whom he is more intimately connected. He never seeks to push on towards the centre alone. He drags forward all his allies with him step by step up the steep sides of the dome. Among the ideas, as among cavalymen, it is the slowest horse that gives pace to the charge. A clique of ideas sinks or swims together.

Each such clique of ideas is known by the alarming name of an *apperception mass*, and the Herbartians maintain that our whole intellectual life is spent in forming new apperception masses and in expanding old ones. Some ideas, from the very nature of things, are much more frequently in the soul than others.

Being frequently within the dome, they naturally make a larger number of alliances than others less favoured, with the result that they have a much greater chance of being recalled. Any idea that necessarily enters into our daily life must form the nucleus of a very powerful apperception mass. An idea, however trivial, that may have the good fortune to belong to one of those dominant groups, has the power of recalling the whole group the moment it gets a footing within the dome.

This may all seem very like that barren set of theories we used to learn at college under the name of the Laws of Association. And if the above were the whole of the Herbartian theory, the resemblance might be maintained. But there is a difference between explaining why a certain idea has arisen in the mind, and why that idea rather than another has arisen in the mind. I utter the word *Carlisle*: up to the very summit of the dome of consciousness of as many as hear me, there springs an idea carrying with it a more or less numerous company of correlated ideas. One finds his mind filled with geographical ideas. "Exactly," says the associationist; "the law of contiguity holds here." Another thinks of *Sartor Resartus*. "Precisely," says the associationist, rubbing his hands; "law of similarity—two sounds alike, the town and the man." A third thinks of the church at home, which does not happen to be at Carlisle. "Thought you had me that time," chuckles the associationist. "Why, there's nothing easier. *Carlisle*, name of Psalm tune, village choir, village church. Any more difficulties?"

Well, yes, there is a trifling little difficulty. The associationist has explained very clearly why each of those ideas has come into the dome of consciousness in which it is found; but he neglects to explain why the same idea did not follow the same word in each case. Why does one man think of a map, another of a book, a third of a church? It is not a matter of mere knowledge. Most people know what a map is and a church; and the least literary among us knows at any rate the name of *Sartor Resartus*. Why does the word *Carlisle* call up different ideas in different minds?

This problem Dr. Thomas Brown¹ tackled in his theory of the Secondary Laws of Association, not entirely successfully, it is true, but as successfully as his system will admit of. For the fundamental weakness of his school becomes manifest in a problem of this kind. If ideas merely succeed each other, we can never understand how they act upon each other, if, indeed, we admit that they can act upon each other at all. The idea of the word *Carlisle* is in the neck of the hour-glass. The ideas of a map, *Sartor Resartus*, and the church at home are swarming about among thousands of others in the upper bulb of unconscious-

¹ *Philosophy of the Human Mind*, Lect. 37. Led by the demands of his subject and by his own clear intellect, Brown has anticipated to some extent the apperceptionist position in his sixth law, and also in his ninth: "Copious reading and a retentive memory may give to an individual of very humble talent a greater profusion of splendid images than existed in any of the individual minds on whose sublime conceptions he has dwelt till they have become in one sense of the word his own." — p. 238, thirteenth edition.

ness. It is hopeless to try to discover which will come out, and why.

By his system of grouping, Herbart establishes at least a plausible theory as to the mutual action of ideas in recalling each other. Utter the word *spot* to a child, and he naturally looks to his pinafore to note, and if possible explain. At the same sound a medical student's soul is filled with ideas about his microscopic examination. The picture of a dog of that name is the only answer to the sound in the soul of some young lady, while a billiard-player's soul does not rise above a certain marked ball. The reason is obvious. The idea of *spot* is connected in each case with a totally different apperception mass. There is here a complete absence of that sense of vague uncertainty that always accompanies the associative explanation of such cases of recall. We are sure of our ground in exact proportion to our knowledge of the content of the soul in question. Not only is the explanation true as it stands. It goes farther; for it maintains that not only will the word *spot* suggest the microscope to the medical student, but it will do so even though it be originally used in connection with some other idea. The young lady may have her attention aroused by the marked billiard ball, but her soul at once dismisses the ball and welcomes the idea of her dog. All this will become clearer, however, after we have a fuller knowledge of the mechanism of those apperception masses.

To begin with, we want to know how apperception masses can begin to be formed at all. The ideas which

make up those masses may be divided, according to Herbart, into three 'great' classes, as similar, disparate, or contrary ideas. The idea of the taste of mustard to-day is practically identical with the idea of the taste of mustard yesterday. Those two ideas are *similar*. The taste of mustard is represented by an idea which is different from the idea corresponding to the taste of sugar, yet both are tastes. Those two ideas are *contrary*. The idea of the taste of mustard cannot be at all compared with the idea of the time of day. Those two ideas are therefore called *disparate*.¹

The only way in which ideas can become related to each other is by being co-presented in consciousness. In this co-presentation, ideas act differently according as they are similar, contrary, or disparate. When similar ideas find themselves together in consciousness, they combine into a homogeneous whole, and by this combination become more powerful in resisting attempts to drive them out of consciousness. Under the same conditions disparate ideas also combine, but in a very different way. They do not form a unity in which each of the parts becomes indistinguishable, but they form a complex in which each part is fitted into the other so as to form a more or less complicated whole. Thus the idea of mustard that I have to-day, at once com-

¹ For several of the English equivalents for Herbart's technical terms used in this chapter, I am indebted to Mr. G. F. Stout, whose luminous articles in *Mind*, 1888, 1889, 1891, give the best account in English, so far as my knowledge goes, of the Herbartian *Psychology*, pure and simple, apart from educational applications. It is, indeed, pleasant to find for once a commentator whose work is really clearer than the text he expounds.

combines with the idea of mustard that I had yesterday. The result is not a new idea, but a strengthening of the old one. This is called *fusion*.¹ On the other hand, a patient who is ordered to suffer under a mustard application at certain regular intervals has a complicated idea, in which the ideas of mustard and the time of day are combined without being commingled. This is not fusion, but *complication*.²

Contrary ideas introduce a totally different form of action. In their case there is neither fusion nor complication, but actual opposition. The idea of the taste of mustard cannot coexist with the idea of the taste of sugar. Each wishes to drive the other over the threshold altogether, in order to enjoy the dome alone. It is true that we can think of pungent and sweet at the same moment, and thus we may imagine that we are combining the ideas of the two tastes. But what really happens in this case is that we are confounding the common element in the two tastes, with the essential element. When we think of sweet and pungent at the same moment, we are not dealing with the ideas of sweet or pungent at all, but only with the fact that there are two tastes which differ from one another, but which are still tastes. Suppose you try to realize in your mind the taste of mustard, in other words to raise the idea of mustard to the summit of the dome, you will find that in proportion as this idea becomes clear, the idea of the taste of sugar becomes obscured. If the idea connected with mustard is perfectly vivid, the other idea has disappeared altogether.

* ¹ Verschmelzung.

² Complication.

We can now understand how rudimentary apperception masses are formed. We know that disparate ideas can form complex ideas. Now suppose that two different complex ideas claim admission at the same time to the dome; note what happens. Whatever is similar in both, at once combines; whatever is disparate forms a new complex; while the contrary elements oppose each other, and the fusion of the two complex ideas is said to be *arrested* at this point. This combination of fusion and arrest is the source of all the activity of the soul.

To illustrate. Suppose a countryman for the first time sees, in a railway station, one of those two-wheeled barrows that porters use for conveying luggage. The idea of this barrow is a complex that seeks to hold the summit of the consciousness. No sooner does it rise above the threshold, however, than it calls up another complex,—the wheelbarrow with which the countryman is familiar at home. There is at once *fusion* of the ideas of carrying, pushing before, two-handledness, woodenness, and whatever other resemblances there may be. Some of the new circumstances are simple *disparate* ideas. The uniform of the porter, the nature of the load, the speed at which the barrow is pushed, are all different from those found in the familiar idea, but may be all easily combined with it, forming a new and wider idea of a barrow. On the other hand, the two-wheeledness of the barrow before him struggles with the one-wheeledness of the barrow at home. The two cannot be thought together. The countryman can readily combine the ideas of his barrow and this uni-

*formed porter. He cannot combine his idea of his one-wheeled barrow with this two-wheeled one. One or other he can think of, but not both at once. The two complex ideas arrest one another at this point. Fusion and complication stop, and either the one or the two-wheeled idea wins, or the idea of the barrow stops short at the wheels. The same process takes place when the closed bottom of the country barrow is compared with the open bottom of the station barrow.

Hitherto we have assumed that ideas do get, in some way or other, into the soul. We must now see more exactly how this comes about. Since there are no innate ideas, the ideas we find in the soul must have got in there from without. Herbart has no back door into the soul. Ideas come with him, as they do with other philosophers, from without through the senses. But since all the senses are open to influences from without, it is obvious that very many more ideas want to get into the soul than there is room for. Upon what principle, then, is admission to the dome regulated? It is here that one of Herbart's most useful distinctions comes into play. Each idea may be regarded from two points of view. It may be treated as something presented to the soul for its examination. In this sense it may be regarded as a part of the furniture of the soul. This is the aspect that is usually present in the mind when the word *idea* is used by ordinary unreflective people. The idea of *horse* is something in the soul which we can think and talk about, and that is all, so far as the soul itself is con-

cerned. To be sure, there is a whole world of questions that may be raised about the relation between the horse in our soul and the horse in the street; but these questions do not in this connection concern us. From this point of view the idea is regarded as *presented content* in the soul. It is something presented, something to be considered, something passive. It is the idea viewed from the standpoint of the soul.

But the idea has another aspect. It may be regarded as an active force, fighting its way as well as may be to the coveted place at the top of the dome. We no longer speak of the idea as presented content, but as a *presentative activity*.¹ As presented content the idea is subject to change, but only slowly and as the result of fusion and complication with other ideas. Our idea of *horse* gradually changes according to our widened experience. As presentative activity, however, the idea is liable to rapid and violent change. For example, there is an idea in my mind at this moment, where it has sufficient presentative activity to occupy a place very near the dome-top, and yet in the soul of the reader it has not presentative activity enough to raise it over the threshold. When I write the word *Koh-i-noor*, the idea of that diamond at once acquires enough presentative activity to spring, for a moment at least, to the very summit of the dome of his consciousness.

You are not to suppose that this idea, which a moment ago was entirely without the dome, had no

¹ *Psy.*, II: "Das wi kliche Vorstellen verwandelt sich in ein Streben vorzustellen."

presentative activity even in the shades of adversity. Every idea that has once risen above the threshold has some presentative activity. The amount of this activity is what differentiates ideas. As presented content all ideas have an equal claim to the summit of the dome. In itself the idea of the Cosmos as an organic Unity has no more right to the highest place than has the idea of the tip of a lobster's pincers. Experience shows us, however, that certain ideas are much more frequently in the soul than others, and every time that an idea is recalled to the soul it strengthens its chance of being called in again. In other words, its presentative activity is increased every time it rises above the threshold. To the philosopher the idea of Cosmos has acquired quite a commanding presentative activity, so that the slightest suggestion is sufficient to reinstate it at the very summit. Certain other ideas have also strong presentative activity, though perhaps not so strong as Cosmos. (The nature of the ideas naturally varies with the school to which our philosopher belongs.) And so on we may go throughout the whole list of ideas that have ever entered the dome of the philosopher's consciousness. They all fall into a sort of hierarchy, according to their varying presentative activities. If this were all, the activity of the soul would disappear. For the most powerful idea would seize the uppermost place, and all the other ideas, in their varying order, would seize a place as high as their might entitled them to, till the threshold was reached, and all the weaker ideas were thrust forever beneath.

This obviously does not represent the actual state of

affairs. No one idea holds for long the summit of the dome, just as no idea is forever excluded from the dome altogether. In some morbid states, indeed, an idea does take permanent possession of the dome of consciousness, with the result that all the ideas must take subordinate rank to it, and must bring themselves, by some means or other, into harmony with a state of affairs in which this *idée fixe* is the dominating principle. In ordinary healthy mental life, however, at any moment something may happen which increases the presentative activity of some insignificant idea, and sends it spinning up to the very summit. Let but our philosopher be a little incautious in a fishmonger's shop, and the idea of the tip of a lobster's nippers may most thoroughly unseat Cosmos from its place on high.

It is clear, all the same, that in every soul there is a sort of order-of-merit arrangement of the ideas, — an order often disturbed, but to which there is a strong tendency to revert as soon as any unusual influence has been withdrawn. The ideas are, indeed, in a state of unstable equilibrium, which is easily disturbed and as easily recovered.

As soon as a new idea claims admittance, there arises a struggle. All the ideas within the dome that are friendly to the new idea do their best to raise it. All the contrary ideas oppose it, and try to arrest it. After the struggle, a temporary equilibrium is gained, and the new idea is kept on, above, or below the threshold. If an idea at any moment occupy the one of those three positions to which it is really entitled in a state of equilibrium, the threshold in relation to that idea is

called the *statical threshold*,¹ while if the condition of equilibrium demand that the idea should occupy a position other than it holds at any given moment, the threshold in relation to it is called the *dynamical threshold*.²

Thus an idea below the statical threshold is in its proper permanent place, and is exactly as if it did not exist, so far as the present content of consciousness is concerned. An idea below the dynamical threshold, on the other hand, is unduly depressed by the temporary activity of another idea or ideas; it is therefore of necessity rising, and will, in the state of equilibrium, be above the statical threshold.

Each idea, too, at any moment, has what is called its *statical point*,³—that is its degree of obscurity in equilibrium,—which Herbart believes can be accurately determined by “an easy calculation in the rule of three.”

The working of the whole mechanism may be well illustrated by the fortunes of the ideas of the different pieces during a game of chess. At the beginning of the game, the ideas will rank in something like the following order: king, queen, rooks, bishops, knights, and pawns, those last ranking in a definite order according to the particular form of opening favoured by the player. No sooner is the game begun than one of the pawns takes a higher rank than some of the pieces, and according to the fortunes of the game, now a pawn, now a rook, has its presentative activity so

¹ Die statische Schwelle.

² Die mechanische Schwelle. *Psy.*, 1-19.

³ Der statische Punkt. *Psy.*, 1-14.

quickened as to send it right up to the summit of the dome.

The king himself must on occasion fall below the dynamical threshold, when some pawn or piece has got into serious trouble. But his presentative activity is so great that the moment the trouble has disappeared he again springs up into consciousness. This rising again into the dome through the mere disappearance of contrary or opposing influences is called *immediate recall*. When, on the other hand, one idea recalls another with which it has on a previous occasion been either fused or complicated, we have *mediate recall*.

The question of recall suggests the important problem of the state of ideas that are out of consciousness. With ideas, does out of soul mean out of existence? Are they like the electric light that springs in and out of existence on the turning of a button? They certainly do not perish, as the possibility of their return shows. Do they then, in their outer darkness, make coalitions with each other in order to make more certain their return to the sunny realms of day, on the model of the "out" party in politics? Herbart's view is that no idea below the statical threshold can exercise any influence whatever. Ideas, however, that find themselves below the dynamical threshold may exercise an influence upon their more favoured brethren within the dome. This agrees with the experience most of us have had of awakening in the morning with a clear knowledge of our surroundings, which were pleasant enough, and yet rendered dull by a miserable feeling that there was something wrong. Our present sur-

roundings are the only ideas that as yet occupy the dome; but the unremembered care, still below the dynamical threshold, influences all the ideas above it. The idea of the care is rising all the time, and it sends on its influence before. The same sort of thing occurs when certain words come to our minds, and we know that those words must be treated with respect. We do not, at the time, know why, but soon the idea of the person who uttered them (and whose opinion we respect) makes its appearance above the threshold. It was on the way all the time, and influenced our thoughts; but it is not till the idea is actually there, that we recognize why we respected the words.

Approaching the subject from a new side, let us take the case of an idea presented to the soul for the first time. The action of the soul upon this new idea is influenced, indeed practically determined, by the masses of ideas the soul already contains. This action is known by the name of *apperception*. There is no merit in the name, and *assimilation* might, as James suggests, do as well. It is necessary, however, to be very clear as to the exact meaning of whichever term we adopt. Steinthal defines it as "the union of two mental groups, in so far as it gives rise to a cognition." With this, Mr. Stout so far agrees, but he seeks to add something. His definition runs "the process by which a mental system appropriates a new element, or otherwise receives a fresh determination."¹

The final clause is introduced to indicate this author's distinction between what he calls *anoetic consciousness*,

¹ *Analytic Psychology*, Vol. II.

and noetic synthesis.¹ He complains that Herbart speaks of ideas apperceiving each other, which implies the paradox that ideas "observe or take cognizance of each other." While admitting the justice of the criticism, we cannot do more here than notice it. For us the important thing is, that in the Herbartian Psychology, since apperception means the acting upon a new idea by all the ideas at present in the soul, and since the number and arrangement of ideas in no two souls are exactly alike, it follows that no two persons can have precisely the same idea of anything.

If Herbartianism did nothing more than emphasize the fact that no two people ever have exactly the same idea, and particularly that no master and pupil can ever have the same idea, it would justify its existence. Teachers are quite well aware that children do not understand big or unusual words; but teachers too often fail to consider that in the case of words with which children are perfectly familiar, there may, there must, be a different idea in the child's mind from that in the master's.

No doubt it may be objected that this is admitted in the prevailing Froebelian principles. Nothing is commoner among kindergartners than the cry for things, not words. As a matter of fact, this cry would only substitute one fallacy for another, but in the meantime let that pass. What interests us here is, that things

¹ With this distinction compare Wundt's definition: "Der Eintritt einer Vorstellung in das innere Blickfeld wollen wir die *Perception*, ihren Eintritt in den Blickpunkt die *Apperception* nennen." — *Grundzüge der Physiologischen Psychologie* (1880), Vol. II., p. 206.

are not a whit better than words, in ensuring that the same idea shall be called up in two minds. Almost every teacher thinks that when he has *shown* a thing to his class, he has done the highest, the best, the ultimate, in teaching. Yet listen to Jacotot. "What is a master?" he asks scornfully. "Isn't he a man who asks another — Don't you see what I am showing you?"¹

Being in an oratorical mood, Jacotot does not pause for a reply. The schoolmaster in his work is not in such a hurry, and insists upon an answer to this question, "Don't you see what I am showing you?" Naturally the boy says "yes," and equally naturally his answer is false.

The average child *does not see* what the master is showing him. Froebelianism drives the teacher from words to pictures, from pictures to models, from models to actual objects, and, after all, Herbartianism comes along, and points out that the living sheep that an enterprising schoolmistress has set scampering about the floor of her infant room, does not ensure that teacher and pupil shall speak of the same idea, when they talk of a *sheep*.

The popular notion is that knowledge has to be carefully prepared beforehand by the teacher, and then judiciously stuffed into a suitable place in the pupil's mind, a sort of mental left-luggage office, there to be left till called for. If the mind is not regarded as entirely passive in the process of acquiring knowledge, it is supposed to be active in nothing beyond the stavedore work of lumping the cargo aboard. The mind is

¹ *Enseignement Universel*, seventh edition, p. 55.

assumed to have as little power to change a fact that it is acquiring, as a quay labourer to change a granite block he is manipulating.

The Herbartian, on the other hand, has none of that reverence for hard facts, so characteristic of the "plain man." Each soul moulds its own facts: —

"If it be not fact for me,

• What care I how fact it be?"

Every man is his own fact-maker, whether he will or no.

It is impossible to escape from the thrall of the irritating crew included under the general term "the ancients." The modern who is wise does not make the attempt, and is always prepared to have his theories traced back to their primary bacillus in Plato or his predecessors.

A very rudimentary knowledge of Greek Philosophy is enough to prevent us from regarding this fact-making theory as any new thing. It has been said before in somewhat different words, and the echo of the original saying has kept rolling down through all the ages to the present day.

Through the philosophic quagmire that corresponds to the phrase "relativity of knowledge," I am reluctantly compelled to invite my reader to pass in the hope of reaching firm ground beyond.

The trouble appears to have begun when Protagoras felt called upon to maintain that "Man is the measure of all things, of things that are that they are, of things that are not that they are not." Those who wish to

throw the blame farther back still, have only to call in Heraclitus with his "eternal flux of all things," but Protagoras will probably serve our purpose sufficiently well. In his criticism Plato admits that Protagoras is right so far as sense impressions are concerned, but denies any wider application of the "measure."

Common sense and modern science agree with Plato. It is true that in Reid's comfortable dogmatism we are assured that we perceive the outer world exactly as it is, and therefore we all perceive it alike. But Locke admits that the outer world may be modified in certain aspects, — colour, smell, sound, taste, — but in other more fundamental respects remain unchanged. According to this view, man is the measure of colours, smells, sounds, and tastes, but not of sizes and shapes. As to the negative part of this proposition there is difference of opinion; but the truth of the positive part is universally acknowledged.

Though man is thus admitted to be the measure of all things of sense impression, he is only a measure for himself. As a standard of measurement, he is therefore a failure, and ingenious people have been driven to attempt to reduce human measures to a common denominator. Certain forms of sense impression lend themselves readily to arithmetical calculation. Colours and sounds vary according to the number of vibrations within a given time, and it has been found possible to fix a maximum and a minimum of vibrations for each individual within which the sense operates, while above and below those limits the vibrations produce no effect. The difference between individuals as

thus tested is sometimes very great, amounting to thousands of vibrations per second. Instruments are being invented and perfected for still more accurately determining such differences. To this class belong the algometer and the plethismograph mentioned in last chapter.

• Every one is familiar with the fact that observers in astronomical stations have to be examined in order to get what is called their "personal equation." This indicates the rate of speed at which a disturbance passes along the nerves to and from the brain, and the relative slowness or quickness has to be allowed for in all calculations based on the observations of the person whose "personal equation" is in question.

The familiar use of this convenient phrase as transferred to all sorts of circumstances, is a kind of philological argument in favour of Protagoras' doctrine as applied beyond the sphere of mere sense impression. This supports the Herbartian doctrine which applies Protagoras' principle even in cases in which the sense impressions do not differ. Assuming the impossible case of two men who have their whole physical organization absolutely alike, we cannot assume that they will apperceive the same idea in absolutely the same way. The way in which an idea is apperceived depends upon the ideas already in the apperceiving soul, and the manner in which they are arranged in that soul. As this can never be exactly the same in any two souls, it follows that no two persons can ever have precisely the same idea of anything. No doubt in certain cases the difference may be very slight, yet identity is im-

possible; while wide differences are the rule, not the exception.

It may be objected that if this be so, the work of the world could not be carried on; we would always be at cross-purposes with each other. Language would become an impossibility if we did not attach the same meaning to the terms we use.

When we wish to express the extreme of contentious contradiction on the part of any one, we say that he would maintain that black was white. Yet this classic case of absolute difference might, for all we know to the contrary, represent merely a difference of apperception masses. What is black to me may appear white to you, and yet neither of us know that he has a conception different from the other. When I utter the word *black*, the impression *white* may always arise in your soul; when I say *white*, the opposite. One is apt to suppose at first sight that the ordinary intercourse of life could not be carried on without at once bringing to light the difference between our impressions.

But consider. You ask me to black your boots, and expect me to bring the whiting pail to do it with. But you forget that your black boots appear to me to be white, so I get my whiting bottle, which is your blacking bottle, and no trouble arises. In other words, I call all white things black, and all black things white; and so long as I do this consistently, no confusion can arise:—

“We called the chess-board black, we call it white.”

Further illustration of this point will be given later. In the meantime it is important to observe that apper-

ception is not mere perception. It is perception *in the light of the whole present content of the soul*. The whole available apperception masses of the soul fall upon the new material, and work it up into a new compound.

Each new idea that enters the soul either encounters friends there or straightway falls under the threshold. When I write the word *hiro*, the idea that rises in response, in the soul of the reader, probably meets no welcoming idea, and if no more be said, the idea of *hiro* wanders slowly down and down till it disappears below the threshold, in all probability never to return. But if I tell you that it is the only Red Indian verb I know, you at once find it a place in the apperception mass which is gathered round the idea *Red Indian*; the apperception mass connected with *verb* also hurries up to welcome the new idea. When you are told further that the meaning of the word is "I have spoken," a fresh set of apperception masses begins to take an interest in the new idea. One of those masses has to do with grammatical constructions and with vocal sounds; another, and in this case the more important, deals with Fenimore Cooper and his braves, who always conclude their speeches, as every well-educated school-boy knows, with the classic words, the sort of Red Indian *Amen—I have spoken*. When the further information is supplied that this word was used by the Mohawks, and that the Frenchmen who first came in contact with this troublesome tribe, misled by the frequency with which the word was used, thought it had something to do with the name of the people, and called them *Iroquois*, the chances are that the word

hiro will represent an idea that has a firm hold in the mind, and that thereafter it will have sufficient presentative activity to spring into the dome as soon as any of its newly formed acquaintances make their appearance there.

We see that the same idea holds a place in very different apperception masses. It may belong to several powerful masses, and to many feeble masses. But in those masses it may occupy a very different place. Take, for example, the idea *Herbart*, which we will assume to have been just now apperceived; that is, it is taken into your mind and has had its place fixed among the ideas there assembled. Take the case of a young and not very well-read teacher. In his mind *Herbart* takes its place in the apperception mass that clusters round the idea of school management. In that mass the idea holds rather a high rank, and as often as school management holds the dome of consciousness the idea of *Herbart* has an exceedingly good chance to reach the summit. But the idea also has a place in other apperception masses where its rank is of the humblest. It holds a very subordinate place in the mass that includes lectures of all sorts; it hovers over the surface of the mass that centres in biography; it has a very slight claim on the mass gathered round the idea of man in general; it holds an average place among the dense masses that represent the dimly known and none too pleasant.

In the mind of the well-informed teacher the idea of *Herbart* has a much better chance. It ranks in the apperception masses corresponding to Germany, phi-

losophers, educationists, theorists, faddists, training, *American Review*, D  Garmo, Froebel, Socrates, and an *etcetera* that would require a volume to fill out.

On this view the function of the teacher becomes clear; for, unlike most Psychologies, Herbart's has an obvious and immediate bearing upon education. The soul is in the teacher's hands, inasmuch as the apperception masses can be made and modified by the teacher. The mind is no doubt active, very active, but this activity can be regulated by what has gone before in the experience of the soul in question.

This word *activity* has been used by writers on this subject in a very loose way, so loose, indeed, that Bradley calls it "scandalous." To keep our position clear, we cannot do better than adopt the definition of G. F. Stout in his *Analytic Psychology*: "Mental activity exists when and so far as process in consciousness is the direct outcome of previous process in consciousness."¹ If the mind is active in this sense, it is hard to find room for any interference on the part of the teacher. But Stout a few pages farther on goes on to say "It is impossible to find any bit of mental process which is determined purely from within."²

Given a certain idea, the soul must act upon it in a certain way, and with this the teacher cannot interfere. The present process of consciousness is determined by previous processes. The child who comes to school at, say, five years of age brings with him an enormous number of limitations of the teacher's power. Every idea in that little head is a force with which the teacher

¹ *Op. cit.*, p. 148, Vol. I.

² Page 155.

must reckon. His first duty is obviously to discover as much as possible about the contents of John's soul. Only so far as he succeeds in this is he able to understand the reaction of John's soul upon any given idea. The very inevitableness of the soul's reaction is the teacher's chief aid. Here he finds the fulcrum for his lever. The rest of his work is actual building up, edification.

Herbart's view of the comparatively greater activity of the ideas than of the soul on which they react is quite in keeping with the statements of writers of opposing schools. The associationists always admit that the soul is far from being the master of its ideas. Then, in his *Principles of Psychology*,¹ W. James quotes with approval from Hodgson and Bain. Says Hodgson: "Volition has no power of calling up images, but only of rejecting and selecting from those offered by spontaneous redintegration."² Bain's statement is: "The outgoings of the mind are necessarily random. The end alone is clear to the view, and with that there is a perception of the fitness of every passing suggestion. The volitional energy keeps up the attention on the active search, and the moment that anything in point rises before the mind, it springs upon that like a wild beast upon its prey."

It is difficult to overestimate the importance of this view from the teacher's standpoint. If the mind must wait till the right idea comes along, what an enormous importance must be attached to the theory of appercep-

¹ Page 589, Vol. I.

² Hodgson uses the term in the Hamiltonian sense.

tion masses. If the idea that the soul ought to choose is not there to choose, what can the soul do but choose amiss? Here Herbartianism appears to great advantage. During the process of education when the soul happens to be on the lookout for a certain idea, the teacher, knowing what is going on in the soul, and the laws according to which its mechanism works, can readily increase the presentative activity of the idea in question, and send it right up to the dome, where, as Bain would say, it is seized as by a wild beast, and assimilated.

In the other and more important case, the case of the pupil who has finished what is known as his education, the results of the Herbartian method are seen to even greater advantage. The best-educated human being is he who has the biggest and best-arranged apperception masses dealing with the life he is likely to lead. Take the case of a young doctor before a sudden "accident" case. If he cannot at will call up the idea that is likely to be of most service to him, but can recognize it when it appears, it obviously follows that he is utterly dependent on his masses. If the right idea does not form part of one of his important masses, it may never reach the threshold at all, or only too late to be of any practical use. A doctor's usefulness, then, depends not merely upon the number of ideas he has in his soul, but also and even more upon the way in which they have been grouped so as to suggest each other at the proper moment. So with what is usually known as conduct, in the moral sense. What do we mean when we say that a man is under temptation? Is it not simply

a name for the state of a man within whose soul passes a series of ideas each seeking realization, yet each, regarded from a certain point of view, evil? If powerful, compact, well-organized masses of moral ideas are present in the mind, the isolated, though intrinsically powerful, ideas of evil are rapidly dismissed. The momentary presentative activity of the evil idea sends it momentarily over its dynamical threshold up to the very summit, but equilibrium is soon restored by the contrary ideas of good arresting the evil idea, and allowing the idea of good to rise into the dome by immediate recall. The state of a soul that is ill-supplied with good ideas calls for little comment. Such a soul can hardly be said to be tempted. The soul must be continually choosing among the ideas presented to it, and if the supply of good ideas is inadequate, it must of necessity choose the evil.

Dr. Paulhan has, by quite a different route, arrived at pretty much the same conclusions as Herbart in the matter of the systematization of ideas. Starting from the English association position, with which he was once in full accord, he worked his way to his two great laws. First, the law of systematic association: "Every psychical fact tends to associate to itself, and cause to develop, the psychical facts which may harmonize with it, which may strive with it towards a common goal or for complementary ends, which, along with it, may be able to form a system."¹

The second law deals with inhibition or arrest: "Every psychical phenomenon tends to prevent the

¹ *L'Activité Mentale*, p. 88.

production or development, or to cause the disappearance of psychical phenomena which cannot be united to itself according to the law of systematic association, that is to say, which cannot be united with it for a common end.”¹

Those two laws, with the principle of finality to bind them together, give Paulhan a system that practically coincides with Herbartianism, and which, while thus strengthening the Herbartian conclusions, should also diminish the Herbartian pretensions.

On yet another point recent Psychology is quite in accord with the Herbartian. The mind is no longer regarded as a mere succession of states. The word *continuum*, as found in Ward and elsewhere, has become popular. We do not now treat each thought as it arises as the whole content of the soul at that moment. Oliver Wendell Holmes makes a marvel of our having three distinct trains of thought going on at the same time. There is the surface thought as represented by the not too interesting conversation that we are carrying on; underneath is the series of reflections in which we criticise the man who is boring us with his talk and pity ourselves for having to make talk to him; at the very depths of our being is the growling refrain of duty neglected, warning us that all this upper talking is very well in its way, but if we do not mind we shall be “Late at Lecture, Late at Lecture.”

What Holmes treats as very wonderful is now the commonplace of Psychology. We, indeed, push the thing farther, and ask why stop at three trains of

¹ *L'Activité Mentale*, p. 221.

thought? Why should we limit the number at all? We used to smile incredulously when we read of Cæsar doing four things at once, but Psychology has got far beyond that stage, and tells us weird tales of consciousness being divided up into perfectly independent sections, which can be switched off and on after the fashion of the electric light.

Interesting as this ill-understood pathological hypnotism may be, it does not as yet concern us. The normal consciousness, with which alone the teacher has to do, may remain an organic whole, and yet admit of the coexistence within it of ideas in very different stages of clearness. Writers whose general principles are quite opposed to those of Herbart have adopted a classification of ideas thoroughly in keeping with his theories. Professor James figures consciousness under the form of a wave, and Professor Lloyd Morgan, in his admirable *Introduction to Comparative Psychology*, works out this figure in all its details, and even goes the length of giving a plan, elevation, and cross-section of the wave of consciousness.¹ All ideas that are on the pointed crest of this wave are said to be *focal*; all ideas in the body of the wave are classed as *marginal* or sub-conscious. At a certain depth the wave is crossed by a line, named in Herbartian language the Threshold of Consciousness. Below the threshold the wave is still continued, but the ideas in this portion are labelled *infra-conscious* or *extra-marginal*. "This infra-consciousness," he says,² "is, in my view, not merely negative but something positive and existent,—what, for

¹ *Op. cit.*, pp. 13 and 14.

² *Ibid.*, p. 34.

want of better terms, we may call the not-yet or not-quite conscious, and yet of the same order of existence as that which lies above the threshold." All this is quite in the lines of the Herbartian system, even to the infra-conscious elements which clearly correspond to ideas below the dynamical threshold as opposed to those under the statical.¹

It must be remembered that Professor Morgan explains his phenomena on quite other principles than those found in Herbart. But those principles, important and interesting as they undoubtedly are, do not concern us here, any more than do the mathematical parts of Herbart's Psychology, which we have up till now shamefully neglected. Herbart believed that the whole of the mental action and reaction could be set forth in mathematical equations. This, indeed, is a fundamental part of his system, as set forth in the title of his *Psychology as a Science founded for the First Time on Experience, Metaphysics, and Mathematics*. Even if Kant were wrong in his demonstration of the impossibility of ever reducing Psychology to the rank of an exact natural science, Herbart was premature in his attempt. Thirty-six years more were to elapse before

¹ The community between the two systems is further shown by the ease with which both may be applied to the needs of education. In his practical and, despite the subject and title, most interesting *Psychology for Teachers*, Professor Morgan has laid down a body of educational principles which might have very well been built upon Herbartian foundations. The book is of great value in itself, but from our point of view it has the additional advantage of establishing our positions by the indirect evidence of a writer who has come to his conclusions by an entirely different line of argument.

Fechner succeeded in failing in the same enterprise ; and even yet there are those who are not quite sure that Psychology has attained to the accuracy of the unanimous science of Numbers. In any case, we find it convenient to omit this part of Herbart's work altogether. His involution and evolution of thought by numbers, and his arrangement of ideas in series, have a terribly convincing air to the non-mathematical mind. But my readers will be happier without this side of Herbart, though no doubt the old philosopher would turn in his grave did he know that we were dropping what he considered the most essential part of his work. It is not given even to mathematical philosophers to understand fully the Perspective of Life.

CHAPTER IV

THE THEORY OF INITIAL EQUALITY

"ALL babies are born good," says Lord Palmerston,¹ echoing the sentiment that with Rousseau passed for philosophy, and that Wordsworth worked up into standard poetry. It is true that the Chinese, with that exasperating way of theirs, have anticipated this thought, and embodied it in their first reading-book. What we regard as a rather smart remark they have reduced to the lowest level of the commonplace; for the very first sentence a little Chinaman reads in his Standard I. *Celestial Reader* is:—

"Men at their birth are by nature radically good."

Long before this opinion gained ground in the West,² at an early period in the world's history, when wisdom must have been much more uncommon than now (outside of China, be it always understood), a certain Bias of Priene earned his place among the Seven Wise Men of Greece by proclaiming the depressing truth: *Most men are bad.*

Any teacher who ventures to place those two statements side by side, and draw the natural inference, must feel called upon to take his place in the dock and plead. For the period between babyhood and manhood

¹ *Vide* Spencer, *Education*, p. 96

² F. V. N. Painter, *History of Education*, p. 12.

is precisely the period for which the teacher is responsible. If we spend our lives in turning good babies into bad men, then is our craft, indeed, in danger.

Before putting in the necessary plea of "Not guilty," we would question the validity of the charge. Before trying a man for murder, it is well to see that the corpse is really dead. As a provisional plea, we admit that we are responsible for the school life of the aforesaid baby who has turned out a bad man—*quoad ultra*, denied. In other words, all babies are not born good, and most men are not bad. Certainly the babies who come to our schools have left far behind them the clouds of glory they are credited with trailing after them from the higher realm from which they have come. As a counter plea, if we were ill-natured, we might carry the war into the enemies' country, and bring up the artillery of the good old-fashioned doctrine of Original Sin. In the light of Total Depravity, we can not only throw off the responsibility for the most men who are bad, but we may actually claim some, at least, of the credit for the minority who are good.¹

All this we feel to be mere skirmishing; but there are those who take the matter more seriously. The Jesuits are said to have proclaimed that if they were entrusted with the first seven years of a child's life, they cared not who attended to the remainder of his education. He would be a Jesuit to the end of his

¹ Cf. Comenius, *Great Didactic*, Chap. V., where he quotes Seneca: "Man is not good, but becomes so, as, mindful of his origin, he strives toward equality with God."

days. Comenius, too, expressed the opinion of a large section of the teachers of his time, when he said that the main work of a school is man-making. "I call a school that fulfils its function perfectly, one which is a true *officina hominum*,"¹ a man manufactory.

Uncomfortable tales, also, come floating up from antiquity to show that old world opinion was strongly on Comenius' side. We have all heard, not without indignation, of the "whipping boy," whose unhallowed hide paid the penalty every time his young master, the Lord's Anointed, strayed from the paths of virtue. But there are darker tales still, and of more evil omen for us, which tell of masters being punished for the sins of their pupils—a most objectionable form of payment by results. In China, where we have seen that men are "by nature radically good," the master seems to be held personally responsible for any change in this highly desirable state of affairs. With a fine devotion to logical consistency, those Chinamen, in cases of parricide, execute, we are told, not only the parricide himself, but also his teacher.

On Froebelian principles it is certainly very irrational to hang a master because his pupil has committed a murder; but if Herbart is to be followed, the case for the master is not so clear. This matter decidedly needs looking into, and must be settled before we commit ourselves irrevocably to Herbartianism. We must run no risks in choosing our Psychology.

Since the soul of the pupil has originally, according to Herbart, "no capacity nor faculty whatever, either

¹ *The Great Didactic*, Chap. XI, sec. 1.

to receive or to produce anything," since all changes in this soul result from its reaction upon ideas presented to it, and since the master can choose the ideas to be presented, and can modify and arrange them, there seems to be a *prima facie* case, for those who wish to hang the teachers of bad men.

We may, indeed, — as most educators do, — decline to accept Herbart's metaphysical conception of the soul, while firmly holding to his psychological positions. Yet even with this limitation, the Herbartian theory brings with it an enormous responsibility for the master.

Rousseau shirks this responsibility by allowing the child to grow up without any interference. The main duty of the teacher during the early years of the pupil's life is — as our school-management books take a special pride in repeating — to learn how wisely to lose time. The teacher is not to educate the child; he is merely to answer questions and give such explanations as are asked. A French cynic tells us that a cat does not caress us; it only caresses itself against us. In Rousseau's system of education, the master exists to be rubbed against. Such a master should run no danger of hanging, even in China. One does not whip the teething coral when the baby breaks the milk bottle.

The Froebelian is equally safe. If the teacher is but a benevolent superintendent of the process of development which he allows to follow its own course, he cannot with any show of justice be hanged. We must on Froebelian principles go back many generations before we find a fit subject for the hangman.

The Herbartian cannot adopt either of those safe plans. He must do positive work. To do nothing may be as harmful as to do something positively evil. To refrain from regulating the supply and organization of ideas, results as certainly in a bad soul as to supply useless ideas badly arranged. He who is not for the child is against him. Nor are there any innate faculties behind which the teacher may shelter himself and hide his bungled work. There must be no complaints against the quality of the material supplied. In so far as the master is the sole educator of the child, in so far as he is directly responsible for the kind of child turned out. If a teacher really wishes to magnify his office, and is not afraid to pay the price, he cannot do better than turn Herbartian.

It is not enough to smile at this man-making theory. Even a sneer is not quite satisfactory. It is to be remembered—and this argument ought to soothe the votary of common sense—that the experiment has never been made. “Psychology may not experiment with men,”¹ says Herbart, and though exception may be taken on certain grounds to the general application of the restriction, there will be unanimous consent that certain direct experiments will not be tolerated. The beginnings of language, the nature of sense perception, the relation between perception and conception, would all be much better understood if we were but allowed to make a few direct experiments, which might involve some sacrifice of natural human development. But the times that Herodotus so simply describes are past,

¹ *Psy.*, Intro., 4.

and such experiments are no longer possible. But there are other causes why the experiment of man-making has not yet been tried. The experiment would probably not be to the advantage of the subject, but it certainly could only be performed at an enormous outlay of time and labour on the part of the experimenter. Not till we are ready to act upon the hard saying of Froebel, "Let us live for our children," can the experiment be tried. It is literally a case of a "life for a life." The teacher would require to devote absolutely every moment of twenty-one years to the pupil, in order that when the pupil came of age he might be exactly the sort of man the master wished to make of him. Besides the terrible demand in the matter of time, the experiment could not be successful unless the master had the complete control of the pupil's environment. Obviously the experiment is out of the question.

This is the less to be regretted that, even if successful, the experiment could have none but the most ghastly results. What happened to Frankenstein from the physiological side would happen to the Herbartian from the psychological. The "man" thus made would be a monster—if not of badness, then of goodness, but none the less a monster. We could not deny the creature a soul, since the soul is given in the recipe for man-making, but the monster could have no power of spontaneous action; it would be nothing but a good-going virtue machine.

Even the very limited claims put forward in this direction at once draw down upon the teacher the most severe judgments. The critics want to know, since the

Herbartians can make men, why they do not make a better job of them. Why are not all men honest, true, happy, and clever, if it is only a matter of supplying the proper ideas at the proper times?

The very obvious reply is that even granting that man-making were possible, *if* we knew the proper ideas and the proper times to apply them, it does not follow that we know either the suitable ideas or the fitting times. A man may surely claim to be a Herbartian without setting up to be omniscient.

More moderate and sympathetic critics may not be inclined to push the Herbartian principles to such extreme issues, yet are inclined to ask whether the position of soul-making does not imply a fundamental equality of the souls operated upon. "Are all men equal at birth?" such critics are wont to ask in a tone that suggests only one possible answer. One would think that nowhere outside of the Declaration of Independence could the assertion be found that all men are equal, and particularly no teacher could be expected to support such a paradox.

Before going into the general question, it is worth while to note that Herbart has guarded himself against this criticism. The soul with which he starts has, no doubt, no capacity whatever, and therefore it may fairly be maintained that all souls are equal, at the start. This admission does not at all inconvenience the Herbartian. For the soul can only be roused to activity by its reaction upon ideas presented to it. These ideas must, in the first instance, be presented through the senses; the senses depend upon the body, and Herbart did not

maintain that the body has no capacity nor faculty whatever — and the rest. There is thus plenty of room for the Herbartian to turn about in, without getting caught in the paradox.

But, after all, is there anything so very heinous in the assumption that all men are born intellectually equal? Does it amount to a *reductio ad absurdum*, when a system can be shown to involve the assertion, that all men are born equal in intelligence?

The apparently absurd thesis of the initial equality of men is at least not left without its supporters. A witty German called Schweitzer, who had risen to a position of some importance in France under the Latinized version of his name, Helvetius, published in 1758 a book entitled *De l'Esprit*. In it he explicitly states and fully works out the thesis that all men are born intellectually equal. With him all intellectual life, when reduced to its simplest elements, can be resolved into the interaction of sense impressions. All our higher functions of thought, feeling, desire, or will, are evolved out of, and may be expressed in terms of those sense impressions, which are indeed the ultimate elements, the final surds, of the Helvetian Psychology. Ignorant of the modern psychometric methods, unfamiliar even with the obvious application to Psychology of the physiology of the nerve centres, it is not so very wonderful that Helvetius fell into the glaring *non-sequitur* that since sense impressions are the foundation of all knowledge, and since we are all capable of receiving sense impressions, therefore we are all at birth intellectually equal.

Even a philosopher cannot afford altogether to disre-

gard the actual state of affairs, that state with which our experience makes us familiar. In real life men differ so notoriously that Helvetius found it necessary to discover some explanation of the change from initial equality, to ultimate difference. For us his answer is momentous. It is all a *matter of education and environment*.¹ Men are born intellectually equal, no doubt. But they soon begin to differ because of their varying *desire for instruction*. To stop with this explanation is obviously impossible. Whence comes this difference in desire, if all the souls are the same? Helvetius is clearly reasoning in a circle, but he has the grace to see that his circle has an indecently small radius. Accordingly he proceeds to add an elongator to his compasses. This desire for instruction originates he tells us, in the impelling force of passions, of which all men *commonly well-organized* are susceptible in the same degree. Maintaining a kindly blindness to the almost impudent begging of the question implied in the italicized words, we are still unable to see that any advance has been made. We are precisely where we started from. We want next to know how it comes

1 " . . . la différence d'esprit qu'on remarque entr'eux dépend des diverses circonstances dans lesquelles ils se trouvent placés, et l'éducation différente qu'ils reçoivent. Cette conclusion fait sentir toute l'importance de l'éducation." — Discours III.

His explanation of the scarcity of geniuses is clever, if not very conclusive. "Les talents compagneards sont toujours condamnés à la médiocrité." Thus at once rids him of all the population of France except the 800,000 who then made up the population of Paris. His next limitation explains why this note is printed in such small type. Of the 800,000 "l'on en supprime la moitié, c'est à dire, les femmes, dont l'éducation et la vie s'opposent, au progrès qu'elles pourraient faire dans les sciences et les arts." When Helvetius has further subtracted old men, children, workmen, soldiers, monks, and others who have no time, or who have other desires than *esprit*, he concludes that the remainder will not be too large for the number of geniuses then existing in France.

about that those passions to which we are all equally susceptible arouse in some of us a desire for instruction, and in others do not.

The fact is that the book *De l'Esprit* should never have been taken seriously. It was far from being a failure. Written to cause a sensation, from this point of view it was a brilliant success. For a few months it set all Europe by the ears, and roused a storm of indignation that wrung three separate recantations from the frightened author. Its short but merry life came to an untimely end at the hands of the common hangman.

What Helvetius maintained for the sake of effect, Jacotot, a teacher and a good one, adopted in dead earnest as a rational explanation of phenomena he had observed. Even the sober-minded Dr. Thomas Arnold, of Rugby, makes the remark that he finds boys differ not so much in intellectual power as in energy. The same observation in the experience of the enthusiastic Frenchman at once led him to make the absolute statement: "Tous les hommes ont une intelligence égale."¹ Like Helvetius, Jacotot held that the great differences we observe among men in mature life are the direct result of education; but with him education really meant self-education. We can all become Racines and Molières if we only have the desire.² It is all a matter of will. The schoolmaster has very little to do with it.

¹ Preface to first edition of *Enseignement Universel*. The references to the *Enseignement Universel* are indicated by the pages of the seventh edition, dated Paris, 1852.

² Page 104.

The "seven years' system," as he is never tired of naming the course of school instruction common in his time (he died in 1840), does harm instead of good to the intellect subjected to it. In his letter to Lafayette he asserts: "Every one who is taught [by another] is only half a man."

On the other hand, he is bitterly opposed to the doctrine that recognizes inherent powers that show themselves independently of all education. "Away with Genius" is his continual cry. "Be it understood that the pupil is always to point out the fact that has inspired this reflection; otherwise he has wandered from the Universal Method of instruction. He works by Genius, that is to say, by groping and blindly: he is sure of nothing."¹

While the ordinary forms of education are tedious and hurtful, the pupils must not presume to do without education altogether. They will get along all right without our help.² But while "a master is never necessary to man," he is "infinitely useful"³ to him. Jacotot takes up pretty much the same stand-by attitude as the Froebelians, but he has not their justification. He has no good reason why pupils should not educate themselves, yet he cannot let them alone. His attitude towards them amounts to this: "I cannot teach you, nor can any other one. You must, in the last resort, teach yourselves, but see that you do it according to the method I have laid down." This

¹ Page 131.

² "Je dis que l'élève ira bien sans vous." — p. 120.

³ Page 304.

reminds one of Sganarelle's injunction to his patient to take care not to die without the doctor's orders.

Leaving theory for a little, what does our actual experience tell us of the equality of intelligence in the ordinary school? Dr. Stewart, one of Her Majesty's Chief Inspectors of Schools for Scotland, who is deeply interested in this matter and has had exceptional opportunities of judging, gives it as his opinion that five per cent of clever boys and five per cent of dunces is an ample allowance. The remaining ninety per cent are average. If this be true of children after several years of education at school, to say nothing of the first five years of home life (by far the most important in the formation of the child's mind and heart), there seems no *primâ facie* objection to the theory of equality at birth.

Further, the estimated percentage of blockheads and clever pupils is determined according to a very narrow standard. The test is a purely literary one. If swimming were a test as in ancient Athens, or archery as in the knightly training, there might still be the five per cent of dunces and geniuses, but they would certainly not be the same five per cent that our present test gives. It has become a commonplace that the dux at school is by no means the most likely to do well in after life.¹ School calls out altogether different qualities from those demanded in what is known as real life. Every teacher can call up scores of cases in which the dull John has completely outshone the clever one. Simply to give point to an argument that no

¹ Cf. Jacotot's sarcasm, p. 206.

teacher will oppose, think of young Walter Scott, the dunce of his class, the boy who could never thoroughly master the Greek alphabet. So widespread was the tale of his early stupidity that poor Sir Walter in later years was forced with humorous pathos to maintain in his diary that he was not *such* a blockhead after all. No teacher, at least, will be unwilling to admit his plea. We know too well, that everything depends upon what the inspector takes John on. Had young Walter been tested on Scottish history instead of Greek characters, Biography would have had a different tale to tell.

Reverting to our five per cent of clever and dull children, we have to remark that the proposition is generally taken for granted "once a blockhead always a blockhead." In other words, the time element is usually left out in considerations of this kind. But cases are frequent in which a really dull boy suddenly brightens up, and others in which the genius seems to have burnt itself out in a boy. Physiology has a good deal to say on this subject. It may not be absolutely true that mental development advances in inverse ratio to the rate of growth of the body, but there is enough truth in it to modify the "always a blockhead" theory. How often do we see a sudden arrest of mental development accompanying a sudden spurt of bodily growth. Other things being equal, I would be prepared to back the undersized boy of a given age against his average-sized rival, and of course still more against the boy over the average.

Passing from this point (which must be recognized as only one of innumerable physiological considerations),

we come to a purely mental phenomenon, which may be called, for want of a better name, mental conversion. In learning, as in religion, there are gradual conversions and sudden. A pupil may learn steadily, showing clear progress from day to day. But sometimes this happens: A boy may appear to be a perfect dunce at some particular subject. He seems to learn hard, but all to no purpose. He puffs and groans over his work, but makes no progress. The teacher sets him down as a hopeless case. Suddenly some morning John awakens up to a belief that he knows his subject at last; and he does. He may be unable to parse, for example, and yet know the whole of his grammar by rote in a dull, unintelligent way. One fine morning the thing dawns upon him. He sees how the affair works. He can parse.

Nursery psychologists tell us that something of the same kind may be observed among children in their youngest years. It usually happens that a child learns to speak gradually and by well-defined stages. But occasional cases occur in which the child remains practically mute for an inordinately long time, and then suddenly bursts out into loquacity.

This mental conversion fits in very comfortably to the Herbartian Psychology. The necessary ideas in any subject are supposed to be duly introduced into the mind, but they have not been united in the proper way to produce the kind of knowledge we desire. The material is all gathered there, and only requires to be brought into the proper relation to produce the effect the master desires. Most people who have travelled

by rail any distance on a rainy day have had a tangible demonstration of the mechanism of mental conversion. We have all beguiled the tedium of the journey by observing the behaviour of the drops of rain that gather on the window-panes of the carriage. Two or three biggish drops start from the top, and make a more or less devious way for themselves down the pane. But most of them do not reach the bottom alone. Sooner or later they coalesce with some other drop or drops, and thus precipitate their descent. Not otherwise do the isolated ideas act. Half a dozen little apperception masses may try to make headway, but ignominiously fail. Suddenly some unexpected jolt of the mental machinery may do what an unusual jolt of the carriage does for the drops, and a new and powerful group is formed which straightway modifies the teacher's views on the nature of the intellect in which this phenomenon has occurred.

The teacher cannot afford to be so dogmatic as he usually is on the question of the inherent natural ability of his pupils. Even the least dogmatic teacher, however, may be excused for shrugging his shoulders when Jacotot improves upon his original paradox and maintains¹ that not only are all men equal in intelligence at the beginning of life, but they remain equal all along. Development of thought, in the usual sense, thus becomes impossible. "I believe that Cæsar as a child thought like Cæsar on the banks of the Rubicon. I do not believe that thought grows little by little. Little Cæsar thought of sweetmeats, and the adult

¹ Page 208.

Cæsar of crowns, but thought did not vary with its object. There are many things to be learnt—which nothing can make us guess—before knowing what a crown is. May it not be that the cause of the common error arises from our confounding thought, which is natural to us, with its expression, which is an acquisition, and a habit which nothing but exercise can give?"

This view is put still more strongly when Jacotot compares not Cæsar the child with Cæsar the consul, but any child with any man. "We have not all the same tastes, the same dispositions, that is to say, the same will, but the smallest child has the same intellect as the adult Archimedes."¹ In other words, the difference between Newton and an ordinary undergraduate who is ploughed in his mathematics is a moral difference—a difference in will.²

While the will is regarded as sufficient to account for all the differences we observe among men, Jacotot does not forget that correlative condition of all development,—the condition that answers to the big and popular word *environment*. Listen to another of his paradoxes: "It is precisely because we are all equal by nature, that we become all unequal by circumstances."³

Tastes, dispositions, and will being eliminated, it is

¹ Page 198.

² Cf. Helvetius: "C'est donc, uniquement dans le moral qu'on doit chercher la véritable cause de l'inégalité des esprits." — *De l'Esprit*, Discours III.

³ Page 109.

clear that what is left may be called, in a popular sense at least, *pure intellect*. That this intellect, considered apart from all the other elements of the soul, is equal among all men can hardly be denied, is hardly worth denying. When the process of elimination has been completed, we find that the intellect we have left does not amount to very much; to no more, indeed, than the simple undifferentiated being which represents the soul of the Herbartian Psychology.

This intellect, too, must be considered apart from all ideas or matter of any kind; for as soon as ideas appear, they necessarily bring in their train at least feelings, which at once introduce an element of difference. Jacotot has, in a word, emptied the soul of content, and has reduced it to a mere mechanism. That this intellect, if such an intellect can be said to exist isolated from all else, is equal "*chez tous les hommes*," one need not trouble oneself to deny. Such an intellect, though of great interest in educational theory, as we are about to see, is of no consequence in a discussion regarding the equality of souls. If men are born with different wills, they are not born equal in any important sense of the term, whatever may be said about a certain abstraction called the intelligence.

It is this abstract and comparatively unimportant meaning of intellect that underlies all the theories that seem to imply the mental equality of men. Jacotot claims that his views have the support of men like Socrates, Newton, Locke, Descartes, Rabelais, Rousseau, and Buffon. He goes further, indeed, and maintains that "Everybody applauds my theory in his inmost

heart, so long as he thinks of himself. It is the application of my system to other folks that annoys and worries people." Then he slyly adds: "I have never seen one man who opposed himself in person to the theory, or cited himself as an example of an idiot; it is always a certain friend, a certain person of their acquaintance, whom they present to me as a proof of the falsehood of my principles."¹

To the extent stated above this claim of intellectual equality may be admitted. When thinking has been reduced to its lowest terms, there is a point at which it may be said to be equal among all men.

In plying his maieutic art, Socrates tacitly assumed the intellectual equality of all those whose thoughts he brought to the birth. The slave boy in the *Meno* reasoned out his problem as well as Euclid himself could have done, had Euclid been limited to the same scant knowledge as the slave boy possessed. Socrates asked his questions in the firm and justifiable belief that they would be answered in but one way.² To a mathematical question, the terms of which are understood, there is but one answer possible. Thus we do not pause to get the assent of our pupils to the axioms that guard the entrance to Euclid. If John does not see his way to admit that things which are equal to the

¹ *Enseignement Universel*, p. 73 (Dijon, 1823).

² "Thus Pythagoras used to say that it was so natural for a man to be possessed of all knowledge that a boy of seven years old, if prudently questioned on all the problems of philosophy, ought to be able to give a correct answer to each interrogation, since the light of reason is a sufficient standard and measure of all things." — COMENIUS, *Great Didactic*, V. 5.

same thing are equal to one another, we do not try to persuade him. We send him home with a note which, as gently as possible, breaks the news to his father.

When Locke declared that he could not understand how honest, earnest men who understood the terms could disagree about any proposition, he assumed that, given a clearly expressed statement, no two honest men could disagree about it, since its effect upon the intelligence in both cases is the same.¹ When Luther laid upon us all the burden implied in the right of private judgment, he really proclaimed the intellectual equality of man, in the sense to which we have narrowed it down.

Luther leads us upon the thin ice of theological controversy, so we hasten to skim over to safer quarters. We cannot work out Luther's principle without introducing disturbing elements with which we have no concern. Against the argument founded upon the system of trial by jury, no such objection can be raised. Every jury that is empanelled is a confession of our belief in the equality, in some sort, of all men. On what grounds do we regard the ignorant greengrocer and the learned biologist as intellectual equals the moment they find themselves, with other ten men, — or thirteen, as the case may be, — in the jury-box?

Even Jacotot would not maintain that in common

¹ "Being fully persuaded that there are very few things of pure speculation wherein two thinking men who impartially seek truth can differ, if they give themselves the leisure to examine their hypotheses and understand one another." — Letter to W. M., 26 Dec., 1692. Quoted by Quick.

life, and in common terms, those two men were equal. What difference, then, can the jury-box make? It makes the important difference of reducing reasoning to a series of judgments. The jurymen is not called upon to think, he is only required to judge. Thinking means, or ought to mean, more than a series of judgments. All that it means we dare not stop to inquire, but this at least it means, that the mind must arrange the matter presented to it, select the important, and reject the irrelevant. The mind must prepare its own syllogisms, instead of merely tagging on conclusions to other men's premises. The most popular speaker is he who keeps on supplying premises to which the audience keep on adding conclusions in the belief that they are thinking. This mechanical formulation of implied conclusions is capitally illustrated by that exasperating person against whom Thackeray inveighs, — the man who explains your joke. You have made your dainty point, you have deftly suggested your delicate idea, your cultured friends have given the appropriately restrained smile that indicates success. Five minutes afterwards your lumbering joke-expounder comes out with a bald statement of your joke which he regards as something entirely his own. He is simply supplying the inevitable conclusion to the premises on which even a joke must be built.

There are few people who can truly think.¹ Take an ordinary intelligent ploughman, who reads his Bible and his *People's Journal*, and set him down to think on

¹ Cf. the sympathetic motto of Steinthal's *Einleitung*: "Denken ist schwer."

a given subject out of his usual run of ideas, say on Conscription ; and one of two things happens. His mind either wanders from the subject in hopeless reverie, or he falls asleep. He cannot think on Conscription.

Placed in the jury-box, how does our ploughman fare ? Here he is not asked to think about the case in hand. The judge and the lawyers do all the thinking for him. The facts for the prosecution and the defence are clearly stated by the opposing lawyers, and are supplemented by the evidence of the witnesses. The judge is careful to explain any strange or technical term that may occur, and the jurymen is permitted to ask any reasonable question. At the close, the judge sums up the whole case, and reduces it to a simple issue of which all the terms are understood by the jury. Trial by jury is based on the principle that under such circumstances the jury can give but one decision. Assuming, as the law does, that the twelve (or fifteen) men are honest and true, it has a right to expect that their decision will be just. The fact that honest jurymen sometimes err is to be explained, not by denying their ability to decide on an issue clearly placed before them, but by laying bare some disturbing element in the way of interest or emotion. A judgment entirely free from the influence of feeling is almost an impossibility, but so far as such disturbing elements can be eliminated, all men under identical circumstances will decide alike.

If the judge can be perfectly sure that he is able to reduce each of his points to an issue that presents precisely the same elements to each jurymen, he may with perfect confidence close each of his paragraphs

with a decision, adding the words the minister uses at baptisms: "That is your belief, is it not?" And every juryman's head would bow with the characteristic suddenness that marks a first father.

Unfortunately, this absolute uniformity of conceiving an issue is practically unattainable. Even a juryman brings to his work a certain amount of organized knowledge, and must interpret all the presented facts in the light of this knowledge. If most people cannot think well, few people can avoid thinking at all. If the jury could either think well, or abstain from thinking altogether, and restrict themselves to judging, trial by jury would not be so unpopular with honest lawyers as it undoubtedly is.

This distinction between thinking and judging is of the utmost importance in teaching. Most teachers regard the simplification of a subject as one of their main functions, and will be surprised to hear it maintained that it is possible to make a subject too clear. Yet if a subject is presented to a pupil in the form of a series of judgments to which his assent is demanded, there may be clearness, there may be intelligent apprehension of each fact presented, there may be great interest in the lesson, and yet there may be little real thinking done. Mere assent to a series of propositions is not thinking. If the teacher has the skill to reduce all his facts to a well-ordered chain of logical issues, he may rely absolutely upon getting a true bill from his young jury every time. But a teacher is not a mere judge, his class not a mere jury. An ingenious mechanic has invented a logic machine into which

you feed premises, and from which, by turning a handle, you duly grind out the corresponding conclusions. How long must the patient experimenter turn the handle before he can educate the machine to think?

The modern teacher, like the modern shepherd, must advance with the times. In the Sunday-school, and in the East generally, the shepherd goes before his flock, who patiently and intelligently follow him. The shepherd with whom common life makes us acquainted goes behind, and by the help of a stick and a dog makes the sheep find the way he wishes them to follow. The older-fashioned teacher, like the older-fashioned shepherd, goes before, and shows the way. The pupils certainly follow, but what they gain by following is not so clear. Even in morals it is not enough that pupils should follow the teacher's example. Most teachers who possess a copy of Chaucer have the page turned down at the description of the "pore persoun of a toun" of whom it is said in words for whose threadbare appearance I feel inclined to apologize:—

"But Cristes lore, and his apostles twelve,
He taught, and ferst he folwed it himselve."

To follow the good parson is well, but to follow the lore is better. With regard to the vexed question of example and precept, the higher criticism from the teacher's standpoint is summed up in the apparently indifferent but really modest statement "Don't do as I do; do as I tell you." It is good to act like Goldsmith's parson, who

"Allur'd to brighter worlds, and led the way;"

but it is better to see that the flock go in the way. We surely do not want to get to heaven merely to keep the parson company. We must put higher ideals before our youngsters, and, above all, we must see that *they* apply them. The newer style of teacher keeps behind, and acts as a *vis a tergo* to impel the pupils to push on for themselves. As soon as they wander from the path, the teacher is ready with his crook to pull them up sharply, and make them start fair again. By this method he hopes that the pupils will acquire the power of acting for themselves, making many mistakes no doubt, but learning more from their mistakes than from the most faultless imitation.¹

A very general criticism of the schoolmaster's point of view is that it sets up the power of reproducing knowledge as the true test of learning. What the pupil can reproduce, that the schoolmaster admits he has learnt. While this power of mere reproduction is not in itself a sufficient guarantee that real knowledge has been acquired, it cannot on the other hand be maintained that what the pupil cannot, in some way or other, reproduce is really acquired. The value of forgotten knowledge is not the point at present at issue. The question is, can a pupil be said really to know what he cannot reproduce so as to apply it to a new case? A pupil may by skilful questioning be made to assent, with full comprehension, to all the detailed statements in a complicated problem in perspective. He understands not only each step in the process, but he

¹ This does not raise the question of teaching from *bad* examples, which opens up a subject with which we have at present no concern.

understands the bearing of each part on the whole. Yet he may be quite unable to attack a new problem of the same kind, or even to work anew from the beginning the problem already studied.

In such a case the failure to reproduce a given problem is a clear proof that the problem has not been really mastered. The teacher here has shown the way, but with very poor results. The test of teaching is not how the master teaches, but how the pupil learns.

The true method is to break up each complicated problem into a series not of propositions but of little problems, not judgments to be made but ends to be attained. In each case the important point for the teacher to attend to is the relation to be established between the ideas already in the mind and the idea now to be presented to it. Not ideas in general, but ideas arranged in the most suitable way is the teacher's aim. This principle is already widely acted upon in our newer methods. Formerly the multiplication table was the only table learnt in school. Now we have the addition table, the subtraction table, the division table. It is felt to be not enough that the numbers should be within the mind, they must be grouped there in the best possible form. Seven and nine, for example, are to be so intimately connected with 16 that they cannot appear together above the threshold without at once increasing the presentative activity of the idea of 16 to such an extent as at once to raise it to the summit of the dome. A well-constructed addition table is an admirable diagrammatic representation of a satisfactory apperception mass.

The conclusion of the whole matter is that we do not know whether all souls are equal at birth, and that after all it does not matter; for by the time the pupil makes his appearance in school, his soul is different from the other souls in his class. On the other hand, there is a sort of common lowest level of thinking. So far as we can reduce thinking to what is described in the old-fashioned Formal Logic Books, our minds may be regarded as equal.¹ Whatever goes on in the mind seems to be the same in all cases, though the rate of speed is very different. We must all pass over the *pons asinorum*, though our pace may be very different. The boy who has gone over the first book of Euclid in six weeks has learned quicker, but not necessarily better than or even differently from the boy who takes six months to it. Yet there is obviously a difference in the two cases. What this difference is it will be the business of the next chapter to discuss.

¹ That this, after all, is what Jacotot means may be inferred from his otherwise untenable statement. "Tout le monde sait la logique."

CHAPTER V

FORMAL EDUCATION

THERE is a prevailing impression among teachers, and particularly among those who are connected with what is sometimes called a liberal education, that it really does not matter very much what one learns. The culture comes all the same. It is not the *what*; it is the *how*. The base utilitarian may study Euclid in order that by and by he may be able to estimate the cubical content of dung heaps;¹ the embryo man of culture studies Geometry in order to train his mind. The Classics have, no doubt, some commercial and social value; but they are said to owe their commanding place in our educational system to their power as a mental discipline. The graduate may forget his Latin and his Greek, it is said, but he can never lose the culture they have left in his mind.

In the present war of competing subjects, the main point of discussion is: Which gives the best result in culture,—which is best fitted to cultivate the mind? Classics, Science, Mathematics—each claims pre-eminence. It is left for the Herbartian to sweep aside all claims alike, and raise the preliminary question: Do any of them train the mind at all; can the mind be trained?

¹ Inspectors of schools in Scotland tell me that this is a very popular application of Mathematics in rural Continuation Classes.

The question resolves itself into the problem of the possibility of what is called formal education; that is, the possibility of training a mind irrespective of the materials upon which it is exercised. This meaning must be clearly marked off from that attached to *formal education* by Professor Donaldson in his *The Growth of the Brain*. There it is used to signify systematic or scholastic education as opposed to the never-ceasing education of experience, and as such is rather lightly spoken of as a force modifying brain development:—

“It appears probable that the education of the schools is but one, and that, too, rather an insignificant one, of many surrounding conditions influencing growth.”¹

Accepting for the moment the popular view that the mind can be trained by any subject whatever, with the limitation that certain subjects are better for training purposes than others, let us see how the thing works out. Take three men, one trained as exclusively as is possible on the Classics, another on Science (say Biology), and the third on Mathematics. To test the effect of the training, a problem is set to all three,—the same problem. Let it be to decipher a certain hieroglyphic inscription. There is a feeling in your mind, is there not, that somehow this is not quite fair. The mathematician and the biologist would probably at once object that this test gave the classic an undue advantage, and when it is pointed out that the inscription is in neither Latin nor Greek, the ready reply is that it is at least in the line of language, and therefore easier for the scholar than for the others. When the

¹ *Op. cit.*, p. 342.

problem of determining the age of a given stratum of rock is substituted, it is the classic's turn to object, and even the mathematician is not pleased. It is not a question in Biology exactly, but it is more in the biologist's *line*. Tossing about for a perfectly neutral test, our eyes fall upon a chess-board, and we set our three examinees to discover how, in the minimum number of moves, to place the knight upon every square of the board. Even here there is dissatisfaction. It comes out that the classic and the biologist consider this problem to be of a mathematical character. It calls into play the same faculties as Mathematics.

The result of our experiment appears to be that each of the subjects in question cultivates not the mind in general, but in certain special directions. In other words, formal education is not quite so formal as it is supposed to be; it is not quite dissociated from the special subject. For when we talk about a mathematical mind, we surely do not mean exactly what we say. It cannot be seriously maintained that the mind acts in one way in Mathematics and in another in Classics. If, then, each subject develops a special form of mind, as indicated by the terms *mathematical mind*, *philosophical mind*, *scientific mind*, this special form must be connected with the matter, — the content of the mind.

To illustrate: suppose the problem set to our three men is to find a lost will, which of the three would have the best chance to succeed? The question is difficult, and not in itself important. We may be wrong in our answer; the important point is upon what prin-

ciple do we proceed to our conclusion. The mathematician we have at once dismissed. The idea of a mathematician, as mathematician, finding anything that is lost is more than improbable; it is amusing. Some may be inclined to back the biologist, from the well-known methods of patient study that his science demands. But on the whole the classic will be the most likely to succeed, and that not because he has a better-trained mind, but because his studies have brought to him greater acquaintance with human nature (part of his subject haughtily calls itself *Humanity*), and there is usually a good deal of human nature about the losing of a will.

Thus, if it is of importance to discover the most likely searcher, we consider the content of the minds submitted; if it is important to find the will, we send for an experienced lawyer.

It is not maintained that this lawyer has a better-trained mind than our three friends, but he has a bigger and better-arranged lost-will apperception mass.

If it be true that this formal education is possible, if the matter of study is only of consequence as a sort of whetstone of the mind,¹ why do not teachers choose pleasanter subjects than at present? We can readily see the force of an argument that condemns cricket as a complete instrument of education. It may be a capital hand-and-eye training, but a certain number of "faculties" are left idle. There must be indoor as well as outdoor education. But when the boy comes in from

¹ Cf. *The Whetstone of Witte*, which turns out to be a book on *Algebra* published by Recorde in 1557.

cricket, why call him away from his chess, to study Euclid? This game is said to exercise pretty much the same faculties as Mathematics. Many boys like chess and hate Mathematics; why not give them what they want? The usual answer is that chess does not offer a wide enough field. The real answer is that, after all, chess-training is only training in chess.

Is it too much to say that the same remark applies to other studies? Is it very unusual to find a man brilliant at, say, Mathematics, and a dolt at all else? Is an intimate acquaintance with the Classics any guarantee of intellectual power in other departments?

But perhaps the most effective argument against formal education is to be found in the way in which sin, vice, and crime are treated as educational agencies.

What could call into play more of a boy's faculties than orchard-robbing? Almost all the virtues are trained in the exercise of this vice. The necessary planning demands prudence, forethought, caution. The choosing of the right moment implies careful observation, judicious estimate of character, and intelligent calculation of probabilities. The actual expedition demands the greatest courage, firmness, self-control. Climbing the tree and seizing the fruit are only possible as the result of the most accurate adjustment of means to end. All the results aimed at in the most liberal intellectual education are here secured; no teacher is required; and the boy enjoys it. Why does not apple-stealing rank with Latin and Mathematics as a mental gymnastic?

Why do we hear so little of education in crime?

We have myriads of tracts on education *and* crime, in which the former is generally treated as a more or less effective antidote to the latter, yet I do not chance to know any treatise on the technical training of thieves and cut-throats.

It is true that one turns with a flicker of hope to ancient Spartan education. Who has not at Sunday-school or church been called upon to admire the heroism of the Lacedæmonian boy who allowed the fox concealed below his cloak, to eat out his entrails, rather than complain? Who has not as a youngster wondered *why* this heroic boy let the fox injure him? And who has not been shocked when in maturer life he found that the boy let the fox feed upon him rather than confess that he had *stolen* it? The moral seems to vanish from the pretty tale, till a new one is supplied when we read some such sentence as this: "The formal education of Spartan boys consisted mainly of Gymnastics, Music, Choric Dancing, and Larceny."¹

At first sight this seems to drive the moral farther off than ever; but by and by we remember that it was held honourable among the Spartan folk for a boy to steal without being detected, while to steal and be found out was regarded as the lowest depth of degradation. The noble Spartan boy in the tale preferred his honour to his entrails.

Here we seem to have a distinct recognition of the value of crime as an educational organon. Thieving ranked with Music and Gymnastics as an essential part of a liberal education. The training power of crime

¹ *Great Educators*, "Aristotle," p. 47.

appears to be fully recognized. It is not till we have looked into the matter closely that we find the Spartans unworthy of the praise we had prepared for their broad-minded views on the subjects of the educational curriculum. Larceny was taught, not as a branch of culture; it was studied as a base utilitarian craft for practical application. It was a mere case of setting a thief to catch a thief. The Helots caused continual uneasiness at Sparta; they had to be kept under in some way, and as they were tricky and cunning, the young Spartans had to be trained in thieving in order that the cunning of the slaves should be met by the cunning of the masters. Archbishop Potter says simply: "Stealing was encouraged to make them adroit";¹ but Dr. Davidson discredits this culture explanation by his statement: "The purpose of this curious discipline was to enable its subjects to act, on occasion, as detectives and assassins among the ever-discontented and rebellious Helots."² Even on this view there seems to be a certain element of general training introduced. At first sight thieving seems, with Spartan practice, to be generalized into murdering. But further examination shows that thieving only taught something which was common to thieving and murdering. The boys were trained to steal not in order that they might be able to steal, but in order to be able to sneak and murder. In order to steal one must sneak; in order to murder one must sneak. Therefore the boy who can steal has learned at least part of the art of murder.

¹ *Grecian Antiquities*, p. 665, note.

² *Great Educators*, "Aristotle," p. 48.

Thieving has consequently, after all, an exceedingly limited field in education.

Yet if formal education is possible, then instruction in crime ought to be educationally as important and profitable as instruction in Science and Classics. Indeed crime has a very special advantage as an educational organon, since it is entirely free from professional prejudices. So much has been written of late on "educational values," that no one can treat of Classics or Science or Mathematics, or Modern Languages, or History, without being at once thrust into a class, and regarded as a partisan.

From this taint, at least, crime is quite free. Fagin's school, as an intellectual training-ground, is virgin soil for the educationist, who can there test theories without fear of his results being complicated by the accumulated prejudices of scores of predecessors. It is, no doubt, humiliating to have to turn to a mere novel instead of to a large, closely printed, and respectably dull treatise. But education in crime is as yet only in the natural-history stage of development. Dickens merely describes, he does not explain. To a later stage belong the theories — and the dulness.

If you examine your mind at this moment, you will probably find it in a state of somewhat indignant confusion. Two ideas have been called into the field of consciousness at the same time, two ideas that have always regarded themselves as natural enemies to each other; and those two ideas have been asked to join in the friendly relation of cause and effect. As two boys caught by the master in the very throes of war, and

ordered by him to shake hands, hang back scowling at each other, not otherwise stand in your minds at this moment the two ideas of Crime and Education.

A little analysis of your thoughts will probably show you that the underlying belief that caused this disturbance is really that crime needs no teaching. There is a prevailing opinion that crime is easily attained; that anybody can be a criminal. If some speakers and writers are to be believed, the difficulty is all the other way, and the great trouble of an ordinary man's life is to keep from becoming a criminal. Now while it is quite easy for any of us to stumble clumsily into crime, it does not at all follow that we have any claim to rank among criminals — real criminals, professional criminals. We all occasionally blunder into a syllogism, but we are not on that account arrogant enough to call ourselves logicians. To be a successful criminal requires as careful training as to be a successful judge, and if we wish to investigate the educational value of crime, we must study it under the most favourable circumstances, in one of the best schools.

We cannot more fitly introduce Fagin's school than by a report supposed to be written by an emancipated inspector of schools who has enlightened views on the relation between education and crime. Such a man, regarding skilful crime as the immediate object of the school, with mental training as a secondary and inevitable result, might well produce some such report as the following :—

“I have again to call attention to the unsuitability of the school-premises. Only a low view of crime can

be formed in a cellar. If this matter is not attended to, it will be necessary next year to recommend a substantial reduction under Art. Onety-one. The organization and discipline are, on the whole, excellent, and the higher grant is recommended, though the teachers should be informed that toasting-forks and frying-pans are not suitable instruments for maintaining order. The tone of the school is excellent, and reflects great credit on the head-master, Mr. Fagin, whose enthusiasm cannot fail to have an excellent effect in stimulating his pupils. The general character of the instruction in the ordinary subjects is creditable. The text-books used, however, are of a low order and are now out of date; they must be changed if the higher grant is to be recommended next year. There is a lack, too, of suitable occupation for the new pupils while the old ones are at their usual work. This must be at once attended to. The physical exercises were gone through with precision and heartiness. Object lessons are well attended to; one of the senior pupil-teachers, William Sikes, deserving special praise for his effective lesson on the loading of a pistol, and the connection between a loaded pistol and holding one's tongue."

Have you imagination enough to picture Mr. Fagin sitting by his fire-side, a saveloy in one hand and this report in the other, reading with the palpitating interest that the works of school inspectors and superintendents always command?

"*Premises*," he mutters, "same old story. Good thing that isn't my lay. *Excellent* — Ha! — *on the whole* — as usual. *Forks and frying-pans* — what eyes

those inspectors have got ! Must keep them out of sight next time he comes round. *Great credit* — come, that's something like — *enthusiasm* — *stimulating*. Now that's what I call — hillo ! What's this about text-books ? *I* didn't make the text-books : that's the publisher's look-out. They're the easiest I can find."

Here we may be permitted to interrupt Fagin, first of all to quote from Dickens the passage referring to the text-books, and then to show that, as is not seldom the case, the teacher and not the publisher was to blame for whatever was wrong.

Oliver is described as turning over the leaves of a book that has been left to enliven his solitude on the eve of a crime into which he is to be dragged. "He turned over the leaves, carelessly at first ; but lighting on a passage which attracted his attention, he soon became intent upon the volume. It was a history of the lives and trials of great criminals ; and the pages were soiled and thumb'd with use. Here he read of dreadful crimes that made the blood run cold ; of secret murders that had been committed by the lonely way-side ; of bodies hidden from the eye of man in deep pits and wells, which would not keep them down, deep as they were, but had yielded them up at last, after many years, and so maddened the murderers with the sight, that in their horror they had confessed their guilt, and yelled for the gibbet to end their agony. Here, too, he read of men who, lying in their beds at dead of night, had been tempted (so they said) and led on, by their own bad thoughts, to such dreadful bloodshed as it made the flesh creep and the limbs quail to think of.

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The terrible descriptions were so real and vivid that the sallow pages seemed to turn red with gore, and the words upon them to be sounded in his ears, as if they were whispered in hollow murmurs by the spirits of the dead.”¹

This is obviously not the sort of literature to encourage enterprise in crime. Had Fagin been able to spare time from his other professional work to edit this manual, you may be sure the blue pencil would have been unflinchingly used. Those totally uncalled-for confessions would cease to mar the charm of the narrative; the gibbet would be carefully excised; those pits and wells would have been seen to, and made decently corpse-tight. We are sure of this, for Fagin is clearly better than his books. Listen to his own method of story-telling:—

“At other times the old man would tell them stories of robberies he had committed in his younger days; mixed up with so much that was droll and curious that Oliver could not help laughing heartily, and showing that he was amused in spite of all his better feelings.”²

There speaks the true teacher. There is a good chance of a boy coming to something in crime with lessons like that. Yet Fagin is not the only genuine teacher in the school. The object lesson commended by the inspector is well worth reproducing in full. Not every lesson given by certificated teachers in this country has the point and finish of Mr. Sikes’ effort. Addressing the trembling Oliver, who is to be forced to accompany the burglar on professional business, Bill begins:—

¹ *Oliver Twist*, Chap. XX.

² *Ibid.*, Chap. XVIII.

“‘Come here, young un; and let me read you a lectur’, which is as well got over at once.’”

But Bill is better than his word. Most teachers begin by telling the class that they are going to give a lesson, and then proceed to give a lecture. Bill does precisely the opposite: his lecture at once develops into a genuine object lesson: —

“Thus addressing his new pupil, Mr. Sikes pulled off Oliver’s cap and threw it into a corner; and then, taking him by the shoulder, sat himself down by the table, and stood the boy in front of him.

“‘Now, first: do you know wot this is?’ inquired Sikes, taking up a pocket pistol which lay on the table.

“Oliver replied in the affirmative.

“‘Well then, look here,’ continued Sikes. ‘This is powder; that ’ere’s a bullet; and this is a little bit of a old hat for waddin’.’

“Oliver murmured his comprehension of the different bodies referred to; and Mr. Sikes proceeded to load the pistol, with great nicety and deliberation.

“‘Now it’s loaded,’ said Mr. Sikes, when he had finished.

“‘Yes, I see it is, sir,’ replied Oliver.

“‘Well,’ said the robber, grasping Oliver’s wrist tightly, and putting the barrel so close to his temple that they touched; at which moment the boy could not repress a start; ‘if you speak a word when you’re out o’ doors with me, except when I speak to you, that loading will be in your head without notice. So, if you *do* make up your mind to speak without leave, say your prayers first.’

"Having bestowed a scowl upon the object of this warning, to increase its effect, Mr. Sikes continued.

"As near as I know, there isn't anybody as would be asking very partickler arter you, if you *was* disposed of; so I needn't take this devil-and-all of trouble to explain matters to you, if it warn't for your own good. D'ye hear me?"¹

Matter apart, this lesson would probably knock an *excellent* out of any inspector.

So far we have found no important difference between Fagin's method and those recommended in the ordinary school-management books meant for less interesting if more legitimate teachers. Indeed, the more carefully we examine Fagin's proceedings, the more orthodox do his methods appear. He relies upon the same motives of emulation with which we are familiar.

"Ah! She's a clever girl, my dears,' said the Jew, turning round to his young friends, and shaking his head gravely, as if in mute admonition to them to follow the bright example they had just beheld."

And pupil-teacher Sikes loyally chimes in, as is fitting.

"She's a honour to her sex,' said Mr. Sikes filling his glass, and smiting the table with his enormous fist. 'Here's her health, and wishing they was all like her.'"²

Precept is joined to example in the game of picking pockets in which Oliver at first joined, and even when the new pupil's dislike of and unfitness for, this trick became plain, the wily master was not discouraged. He knew the value of mere mechanical imitation, as well as the most experienced among us.

¹ *Oliver Twist*, Chap. XX.

² *Ibid.*, Chap. XIII.

"From this day, Oliver was seldom left alone ; but was placed in almost constant communication with the two boys, who played at the old game with the Jew every day : *whether for their improvement or Oliver's, Mr. Fagin best knew.*"¹

In short, Mr. Fagin acts precisely as a better-trained and more skilful McChoakumchild² might. The only difference is that McChoakumchild teaches virtue, Fagin vice. This being so, what are the intellectual results in the two cases ? Apart from the matter studied, whose pupil shows to more advantage, McChoakumchild's or Fagin's ?

Oliver Twist and John Dawkins, otherwise known as the Artful Dodger, are expressly stated to be of the same age. Oliver had been brought up on virtue — that is, in the workhouse. Dawkins had been reared on vice. Which had the better-trained mind ? Dickens certainly did not intend his readers to regard Oliver as a fool — Oliver is supposed to be the hero of the story. Why, then, does the reader close the book with the more or less contemptuous belief that Oliver is a noodle, — a good little boy who by all the rules of the game ought to have died under Gilos' blunderbuss ? Dickens means us to think of his hero as a pale-faced, intelligent, indeed *spirituel* boy, and only fails because the Artful Dodger completely outshines his virtuous rival in the favour of the reader. No doubt it is hardly fair to compare a workhouse pupil with the brightest ornament of Fagin's Academy. But take a wider range, and the result is the same. It is a matter of the

¹ *Oliver Twist*, Chap. XVIII.

² *Vide* Dickens, *Hard Times*.

most trite remark that the street Arab, brought up among vice and squalor, is intellectually much brighter than his better-fed, and supposed-to-be better-taught rival of respectable parentage. Such a widespread impression must have some sort of foundation, and it is obviously of the first importance to us as teachers to find out how much truth there is underlying it. For if the popular notion implies exactly what appears on the surface, our profession has to face a very grave charge. If the gutter produces better intellectual results than the primary school, then shall the discontented ratepayer have a genuine grievance at last.

To begin with, the method of the gutter has the great advantage of the compulsion of necessity. What can the most zealous compulsory officer do, what can the most supple cane accomplish, in comparison with the persuasive voice of the Mother of Invention? We in school teach our pupils certain things in order that "by and by" they may know how to do certain other things. Fagin and his pupils seek to attain an obvious and immediate end. It may reasonably be interposed here: if Fagin's method of direct teaching produces better results than our indirect methods, why not follow his lead? It must be admitted that there is something in the complaint. In some respects our school methods are too indirect. Sufficient care is not taken to let a child see the "sense" of what he is learning. We are too fond of telling him to wait till he is big, and then he will understand all that. But while so much is admitted, it must be remarked that direct teaching is not always desirable outside of the gutter —

nor indeed always possible. In the third place and chiefly, it is at least very questionable whether Fagin's methods do produce better results.

In the first place, the comparison between the street urchin and the primary-school boy is unfair, because of the greater struggle for existence among the street urchins. A certain principle, known as the *Survival of the fittest*, has much more scope in the gutter than in a primary school. In Fagin's Academy the physically weak go rapidly to the wall, the intellectually weak to the lock-up. What a waste of gutter children goes to the making of one Artful Dodger! Hunger and cold, whiskey and prison, do their work; a few brilliant exceptions are left, and the ordinary schoolboy is compared with a Charley Bates, or an Artful Dodger.

But from our present point of view, the most important consideration remains. What is made the test of intelligence in the two cases? A little exercise of the memory will make it clear that almost in every case where the street Arab has shown great intelligence it has been a matter of what is called "the main chance," looking after number one. This remark must not be misconstrued. There is no attempt here to deny the good qualities of the Arab. We have all heard wonderful tales of the kindness of the poor to the poor, which we are but too glad to believe. Only, it is well to note that even in his generosity the Arab is concerned with the main chance—his skill is still in how he can make ends meet. His intellect is tested by his power to keep himself and others alive.

This is, indeed, generally admitted, but the natural

inference is not drawn. Instead of telling in favour of the primary-school boy, it is usually turned against him in some such sneer as this: "Your schoolboy is all very well with his vulgar fractions, and his parsing — throw him into the street and see how he and his education will compete with the illiterate gamins." As well might one argue "Your monkey is all very well with his cerebral convolutions and all that; but throw him from the top of the Eiffel Tower, and see how he will compete with the swallow that you say is intellectually so much his inferior."

The apperception masses in the schoolboy's mind are quite different from those in the gamin's, and if we always make our comparisons in terms of gamin masses, naturally the schoolboy will always appear at a disadvantage. It is a difference not of mental power, but of mental content.

The same sort of comparison is being made every day between townspeople and country-people. Philology is eloquent with abuse of the countryman, the rustic, the clown, the lout, the boor, the yokel, the clodhopper. Naturally those fancy pictures are drawn by townspeople, who take care that the picture gets in every case a city background. A countryman implores a policeman to pilot him across the Strand; does this prove that the policeman can judge better of speeds and distances than the countryman? Change the scene to the country, and the rôles are exactly reversed. The policeman makes the wildest guesses at distances, and can form no estimate of the speed of hares and crows.

We can all judge, we can all reason, not so much according to our "natural powers," as they are called, as according to our familiarity with the subject under discussion. We should not say that So-and-so is a very clever fellow, but that he is very clever in this or that direction. A man may be a distinguished microscopist who can observe to the most uncomfortably small part of a millimetre, and yet be quite unaware that his students are copying under his very nose at examination; and are we not inclined to doubt the philosophic powers of any thinker who has enough society observation to recognize his friends in the street?

De Morgan's ideal of education — "to know everything about something, and something about everything" — represents approximately every man's actual state of knowledge. We may not quite know everything about something in the sense of the German philosophers, but we all know practically all that is worth knowing about something — if it be only the best way of filling a pipe, or twisting a curl paper, and the farther afield we go from our favourite piece of knowledge, the more uncomfortable do we feel, and the slower does the mind act.

For each individual, the contents of the universe fall into a Cosmos special to himself, and in the centre of which he stands. The matters in which he is most interested crowd close up to the centre, and among those his mind acts freely and rapidly. The farther any matter is from the centre, the less freely does his mind work in it, till at last, at the outer edge of this Cosmos, the mind reaches an endless fringe of what is practically

unknown. The range of a man's intellectual activity may be not inaptly represented diagrammatically by one of those ancient charts of the world, in which the Mediterranean is marked very boldly, if not too accurately, in the centre, and the rest of the world is represented in ever vaguer and more hesitating outline as it recedes from the known centre till it loses itself in a vague beyond pictured by clouds, and labelled "Cimmerian darkness."

An accomplished oculist talks easily, and with a not unpleasant touch of dogmatism, about the eye—the eye is his Mediterranean. Of the ear he talks still easily, if a little contemptuously, but the touch of dogmatism has gone. Of the heart he talks with a familiarity tempered with respect. With ever-waning confidence and waxing respect, he speaks of general physiological problems, wide biological questions, Greek, the steam engine, bimetalism, and a vast *etcetera* of the almost totally unknown.

In short, the soul is not a mere knife that may be sharpened on any whetstone, and when sharpened may be applied to any purpose,—to cut cheese or to excise a cancer. The knife takes character from the whetstone. The Chancellor of the Exchequer preparing his Budget has not a better-trained mind than the illiterate washerwoman with her hand in the stocking foot near rent day—he only deals with higher things. No doubt the Chancellor would feel as helpless in the art of stocking-foot economy as the old woman would if called upon to deal with imperial finance.

Think of Laplace, the great Laplace, the man who

made the theory, dismissed by Napoleon for *incapacity*, and say whether the greatest mind may be truly called great, when tested apart from the apperception masses with which it is familiar. Had Laplace's mind been the highly trained instrument formal educationists would have us believe; he ought to have been as good a minister as mathematician.

One of the leading ideas in Carlyle's book "On Heroes" is that the great man is intrinsically great; that a great poet might have been equally well a great warrior or a great mathematician. Observe, the statement is "might have been." That a great poet at maturity may become a great warrior or mathematician, the Herbartian would emphatically deny. Had Napoleon caught Laplace young, and given him political work to do, there seems no reason to doubt that the dismissal would not have occurred — the man who is now known as the great mathematician and physicist would have been known as a great minister and diplomat. But if, in the circumstances that actually arose, Napoleon had been more patient, and had given the great mathematician a longer trial than the few weeks that history records, it is quite probable that Laplace would have made a good average second-rate minister.

A combination of the Carlylean doctrine of the convertibility of genius, and the Herbartian doctrine of mind or soul building, makes the best philosophical blend for the use of the practical teacher. With the whole range of Philosophy before him where to choose, the teacher, who is anxious to magnify his office, will not stir a foot farther afield.

We have seen that, whether interest or will be the determining influence, our daily experience in school drives us to the conclusion that by the time pupils come to school their minds have all the appearance of differing in original quality; but it does not at all follow that by appropriate training and exercise we can raise a lower quality of mind to a higher. All that we can do is to make the best of the given mind—and this is very much. The difference between the best and the worst use of the same mind is enormous. Given the same first-class mind, we may turn out an Artful Dodger or a James Watt; given the same third-rate mind, and we may develop it into a Bill Sikes or a more than respectable artisan.

Do not for a moment let it be supposed that a Herbartian regards an artisan as necessarily of the third class. Certain haughty philosophers are pleased now and then to be greatly surprised at the intelligence occasionally displayed by "common people." The Herbartian is not astonished either by the occasional brilliancy or the average gloom. Speaking generally, the artisan is not in a very favourable position for increasing hisapperception masses; therefore he is seldom strikingly different from his fellows. On the other hand, his intellect may, if circumstances favour, turn out as good work as comes from any other social grade.

Why, for example, are pupil-teacher candidates for admission to the British training colleges supposed to be inferior in intelligence to the students of the same age at the universities? The answer is not far to seek.

For three or four years of their best formative time the pupil-teachers have to work in a groove where their apperception masses have no chance of growing in width, though they certainly do grow in strength. Teaching all day, and parsing and analyzing all night, they develop abnormally large apperception masses in certain directions, with the result that the ideas forming part of those masses enter into so powerful coalitions among themselves, that they offer an almost insuperable barrier to the entrance of any new ideas. The difference between the mistress and the maid, between the master and the workman, and between the country blacksmith and the city one, can all be explained in pretty much the same way. One of the two is limited to monotonous work, to the eternal repetition of the same thoughts or reflex actions. No new apperception masses can be formed, or, at any rate, fewer such masses can appear in the one case than in the other ; hence the apparent difference in intelligence. It is, after all, not a matter of minds, but of masses.

It is clear, then, that we cannot separate the mind from its content. There is no such thing as pure mind in the actual practice of life, whatever there may be in the ultimate analysis of Metaphysics. Above all, it is certain that we cannot exercise the mind *in vacuo*. Yet the mind is admitted to work in the same way, whatever the material upon which it acts. The mere existence of the science of Formal Logic is sufficient proof that the laws of thought may be considered quite apart from the subject upon which thought may be exercised. It is generally admitted that the man who thinks rapidly

and effectively upon a given subject obeys exactly the same logical laws as the slow and feeble thinker. How, then, can the well-known fact be explained that a course of study does quicken the thinking powers?

Herbert Spencer has a pregnant idea, "fact organized into faculty,"¹ which may help us to answer. A fact, so long as it remains outside the experience of an individual, is absolutely non-existent for that individual. But even when it is brought into his experience, it may be quite unintelligible to him, may be incapable of any practical application. It is only when the fact has been apperceived by the soul, and has had its place among the ideas fixed, that it becomes a power in that soul. A fact thus treated ceases to be a dead, inert thing; it acquires a force of its own, and in its turn acts upon new facts presented to the soul. It changes its position from that of a mere bit of the external material upon which the soul acts, to that of an integral part of the soul which acts upon presented material. It passes from the objective to the subjective, from the non-ego to the ego.

To this extent Spencer himself may be cited as a supporter of the doctrine of apperception.

Most people think they can separate themselves from their knowledge; that they can put the knowing soul on one side, and the known content on the other. As a matter of fact, we know any one part of what we know only by the help of another part. As soon as we have separated all we know from the knowing ego, the ego

¹ "Knowledge is turned into faculty as soon as it is taken in, and forthwith aids in the general function of thinking."—*Education*, p. 90.

itself disappears. *Cogito ergo sum* is the ultimate of mental analysis, but we cannot cogitate upon nothing. Since, then, we cannot have the knowing ego by itself, and since each new fact is acted upon by the facts which then form part of the apperceiving soul, it follows that the more facts that have been organized into faculty, the more readily will the mind act, and the greater will be the range of facts upon which it will act easily.

There are here two different qualities,—readiness and range. The former is acquired by practice in apperceiving the same or closely allied facts; the latter by apperceiving a large number of facts of different character. A chemist acquires from his work great readiness in using the metric system, but this readiness does not extend far into other and different matters. If the chemist desires a wide range of mental susceptibility, he must read and observe widely.

Within certain narrow limits, it must in fairness be admitted, any mental exercise whatever does develop the whole soul.¹ Take the analogy of the body; a certain amount of exercise of any kind will maintain it in health. Yet even here if special kinds of skill are required, special forms of training must be adopted. Since the body is an organism, we cannot exercise any one part of it without affecting every other part at least in some degree. The lop-sided blacksmith whose right arm is more fully developed than his left has still trained the whole body to some extent through his work.

¹ But cf. some very remarkable statements on the teaching of reading quoted from Mr. Moseley by Sir John Lubbock: *Addresses* (Macmillan & Co.), p. 72.

As it is manifestly unwise to develop a boy's muscles in this abnormal way, so with the soul it would be a mistake to develop it entirely by reaction upon matters belonging only to the technique of a profession. Certain subjects must be studied as correctives. The school curriculum must be thorough enough to produce readiness in all the subjects studied; and at the same time wide enough to produce a fairly uniform all-round development.

All that is usually included under the term *training* as opposed to teaching, seems to be in favour of the argument for formal education. A boy who is punctual, respectful, and obedient at school, it is said, will not lose those good qualities when he goes to an office. Obedience may be learnt at school, at home, in prison, in the street, in the workshop, in the army. Here, at least, the material upon which the soul acts appears to be in itself of no consequence. Yet even habits bear the trace of their origin. A man may be an accurate sorcerer, and yet a very inaccurate arithmetician. A nimble-witted demonologist may be a slow-thinking botanist. Is it so very unusual to find a boy obedient at school and unruly at home, respectful in the office and impertinent in the street? To come to a later, and therefore more telling stage, is a soldier's obedience quite the same thing as an artisan's or a convict's? Do we not all become subdued to that we work in?

The question therefore inevitably emerges, which sort of subjects ought we to adopt, in other words, which are the preferable apperception masses? Herbert

Spencer has a theory with regard to the relative value of school subjects which he has evolved out of his suppositions with regard to the principles on which the universe is managed. First he recognizes the two functions of a school subject,—the value of the matter studied, and the value of the training derived from the study. Economy is one of Nature's first laws, he maintains, and therefore she could not permit the intolerable waste that must be involved in the theory that we have to learn one set of things for their own sake, and another for the sake of the training derived from their study. We are therefore compelled, he argues, to regard whichever subjects are most useful in giving necessary knowledge as also the best fitted for training the mind.

Without at all subscribing to Spencer's principles, we are led to something very like his conclusions. It is no part of our purpose to determine which subjects shall be taught in school, or out of it. It is enough if it has been shown that the choice of subjects is important; that a subject must be chosen for its own sake, not for the sake of its general effect in training the mind. This is no base utilitarian conclusion, no truckling to what the Germans call the *Brod Wissenschaften*, the Bread-and-butter Sciences. The rather are we encouraged, nay required, by our principles, to read more widely than before. Only, we are to read and study for the sake of the subject itself. So far from opposing culture, the Herbartian theory is the strongest supporter of the fine arts and belles-lettres. The increase in intension and extension of interest is the

gauge of the development of a soul. We must lose ourselves in our subjects, not seek to keep them outside of us.

Art for Art's sake acquires a new and a healthier meaning from the Herbartian standpoint.

Teachers used to have, and ignorant people still have, a pretty theory that we ought to learn pieces of poetry in order to cultivate the memory. This venerable, this ludicrous fallacy has been long exploded, yet our teachers continue to make their pupils learn poetry, and codes and programmes wisely require a certain amount of repetition every year from each child who studies English. There is this important difference. The point of view is entirely changed. Pupils learn poetry now not for the sake of the memory, but for the sake of the poetry. Would it not be well if the same change of the point of view took place with regard to certain other subjects which need not at this moment be specified? It is something that the principle has been recognized and acted upon, even in the elementary school. Herbartianism is, after all, not entirely in the clouds.

Coming back for a moment to our illustration, how does our conclusion apply? Crime as an educational organon is condemned, not because it fails to develop intelligence, but because it develops it in a wrong direction. We cancel Fagin's certificate not because he is a bad teacher, but because he teaches bad things.

CHAPTER VI

THE MEANING OF OBSERVATION

It is difficult to believe that Bishop Berkeley wrote for an English-speaking audience. To the plain man subjective idealism is something that should have come from Germany, or rather that should have stayed there. To the ordinary consciousness there is the mind within, and the great world of facts outside. The mind and the world are, in the very nature of things, opposed to each other, and what God has separated let not man make one.

Yet the two must be brought into relation to each other: the teacher's work is regarded as the shovelling in of as many of those outside facts as the mind can contain. The great shovel for this purpose is known as Observation, a word dear to the hearts of "Teachers, Inspectors, School Superintendents, School Boards, Parents, and Others interested."

The lack of observation is coming to be regarded as the great evil of modern education. We are continually being told that we do not observe enough, and certainly, when put to the usual tests, we do not make a very distinguished appearance. If every Englishman were asked to state, under pain of immediate death in case of error, the exact number of steps in the stair leading up to his bedroom, there would be a slaughter

throughout the world unequalled since the days of Noah. And if the mortality would be slightly diminished by giving the unfortunate victims the choice of stating which arm they first thrust into the sleeve when putting on coat or jacket, it would not be because of greater observation, but from the fact that, there being but two possibilities in this case, the chances of life and death would be equal.

A whole class of students of Psychology has been reduced to the most shamefaced confusion, when suddenly asked to write down, without time for investigation, the answer to the question: "How many buttons have you on your waistcoat?" This state of matters is greatly to be deplored, and a certain section of *practical* educationists give us many opportunities to grieve over it. When a class in school has been floored by some such simple question as: "With which foot do you usually begin to walk?" or "At which end does a recumbent cow begin to rise?" those practical educationists turn to the teacher, and, with a deprecatory smile, ask if it would not be better to pay a little more attention to the "observing faculties" of the pupils.

Being a wise man, the teacher smiles in return, and holds his peace; but this does not prevent him from afterwards explaining to the pupil-teacher who saw the experiment and heard the criticism, that it is no great disadvantage to the children that they do not know which end of a cow gets up first, while it is positively to their advantage that they do not know with which foot they start to walk. To the ordinary child or man

it is of no importance how the cow distributes the labour of getting up, while the introduction of conscious knowledge into the act of walking really interferes with that act.

If any one question this, let him start to reflect upon what he is doing as he rapidly runs downstairs. So long as he does not think about the matter, all goes well; but as soon as the attention is directed to the motion, everything gets into confusion, and the experimenter is lucky if he escape without a tumble. Even the pupil-teacher should know that the upper brain, as soon as it has become perfectly familiar with the regulation of a certain act, hands it over to the lower brain, where it is attended to in future, being allowed access to the upper region, the region of consciousness, only under very exceptional circumstances. The greater the number of acts that have thus been thrust out of consciousness so as to become reflex acts, the greater the development of the soul in question. The greater the painter, the less able he is to describe the mechanical methods by which his results are produced. If a man has to consider with which foot he shall start to walk, his attention is by that very fact taken away from other and more important work.

Little opposition need be feared to what has been said against observing how we perform reflex acts, but with regard to the other set of facts, the uprising-cow sort of fact, there exists a very widespread fallacy. Common sense and school-management books here form an unwonted alliance in favour of more attention to the training of what is called observation. It is admitted

that the number of steps, the number of buttons, and the end of the cow are not in themselves of very much importance. The *but* that naturally follows this concession may introduce, according to the bent of the speaker, either or both of two different lines of argument. It may be maintained that while the mere facts in question are insignificant, the habit of observation acquired in noting them is valuable; or it may be argued that though the facts are at present of no consequence, one never knows at what moment they may become of vital importance.

Dealing with the former, the training theory, first, it must be acknowledged that it is possible to train the mind to note unimportant and unconnected facts. You are familiar with the account of how Robert Houdin trained himself and his son by walking rapidly past some shop on the Boulevards, and then comparing notes as to the number of objects each had been able to fix on his mind in the momentary glimpse at the window. It is said that they got the length of accurately noting as many as five hundred different objects. I myself have trained a class by constant practice to discover more from a five seconds' exposure of a picture than an untrained adult could accomplish in a couple of minutes.

This is hardly the kind of training that the observationist educationist clamours for. He wants the pupil to observe everything. He writes books like that tiresome "Eyes and No Eyes." He tells us of one-eyed dervishes who see more with their one eye than most of the rest of the world do with two. He cites men like

Zadig, who earns the distinction of imprisonment and a heavy fine for telling all about a spaniel and a horse that he has never seen. In those days he points to the marvellous deeds of Sherlock Holmes. After reading one of this gentleman's wonderful cases, the educational reformer is apt to remark: "How simple it all is when once the method is explained; if our children were taught to observe as they should, they could attain to something in the same direction."

Now the famous detective is a very unfortunate illustration for the "observationists." His observation is not theirs. What they call observation, I fear he would call gaping. A "country walk" is the ideal occasion for the reformer's observation. The pupil is supposed to go along with all his senses on the alert. He is to observe the note of the skylark, the scent of the violets, the form of the clouds, the colour of the primroses, the smoothness of the grass, the springiness of the turf. He is to amble along with all the Five Gateways of knowledge wide open, and we know that the mouth is one of them.

This diffused Sandford-and-Merton gaping is not observation as Holmes understood it. No doubt your typical detective of romance is always described as being specially observant, and this is sometimes illustrated by his marvellous powers of noticing all sorts of irrelevant things. For example, we have, in a detective story of the Holmes class, an amusing description of the education of a detective, and a specimen of his powers when mature. He gives an inventory of what he has observed in a certain drawing-room: "Carpet,

Brussels, whitish ground sprinkled with largish roses. Wall paper same shade as carpet, diamond pattern, in dull gold. Facing door, water colour; girl crossing stream on stepping-stone, making signs to little chap on bank. Over door, water colour; old gentleman, knee breeches, reading book in a wood. Twelve chairs, various—four easy, three spider-legged, in gold. Little round-topped table near window, microscope on it, and a bracket full o' books; Tennyson's poems, green and gold, seven vollums; *Imitation of Christ*, white vellum, gold letters; foreign book in a yellow cover, don't know the name; 'Leaders from the *Times*,' two vollums, name of Phillips. Little cabinet in the corner, seven drawers, key in the middle drawer, basket of flowers and lady's photo on top. Chimney ornaments Dresden china, stag with antlers caught in a tree, left antler broke."¹

Mr. Prickett's observations might have been of value in view of a possible public auction, but they do not seem to help him much in his actual business. He would do well to remember his own pregnant words: "The major part of people ruins their memories with reading novels and songs and trash." With Holmes all this is different. The irrelevant catalogue observation is replaced by a carefully grouped selection of facts to note. He only looks for certain things. Indeed, he is careful not to let mere observation bulk too largely in his methods. It is only one of three essentials to success in his profession. To the mind of the ordinary educational reformer

¹ *A Dangerous Catspaw*, by D. C. Murray and Henry Murray (Longmans, 1890), pp. 129-132.

observation includes the whole three, though each is really independent.

It is Holmes' biographer, Dr. Watson, who speaks in *The Sign of Four*:¹—

“‘But you spoke just now of observation and deduction. Surely the one to some extent implies the other.’

“‘Why, hardly,’ he answered, leaning back luxuriously in his arm-chair, and sending up thick blue wreaths from his pipe. ‘For example, *observation* shows me that you have been to the Wigmore Street post-office this morning, but deduction lets me know that when there you despatched a telegram.’

“‘Right!’ said I. ‘Right on both points. But I confess that I don’t see how you arrived at it. It was a sudden impulse upon my part, and I have mentioned it to no one.’

“‘It is simplicity itself,’ he remarked, chuckling at my surprise—‘so absurdly simple that an explanation is superfluous: and yet it may serve to define the limits of observation and of deduction. Observation tells me that you have a little reddish mould adhering to your instep. Just opposite the Wigmore Street office they have taken up the pavement and thrown up some earth, which lies in such a way that it is difficult to avoid treading in it in entering. The earth is of this peculiar reddish tinge which is found, as far as I know, nowhere else in the neighbourhood. So much is observation. The rest is deduction.’

“‘How, then, did you deduce the telegram?’

“‘Why, of course I knew that you had not written a

¹ Page 11.

letter, since I sat opposite to you all morning. I see also in your open desk there that you have a sheet of stamps and a thick bundle of post-cards. What could you go into the post-office for, then, but to send a wire? Eliminate all other factors, and the one which remains must be the truth.' "

In the above we have a typical example of the class of blunders commonly made with regard to observation. "Observation shows me that you have been to the Wigmore Street post-office," says Holmes. From his own implied definition of the term, this is not so. What he ought to have said is what he says a little farther on: "Observation shows me that you have a little reddish mould adhering to your instep." He puts the deduction in the wrong place. It begins sooner in the process than Holmes admits. He did not observe Watson going into the post-office; he deduced this action from the red mould that he did observe. This mistake as to the precise limits of observation and deduction is continually being made, and is the cause of much of the confusion that marks writing on this subject. Nor is this to be wondered at when it is remembered that the limits of the two processes vary with the individual. For example, Holmes in a sense may be said not to have observed the red mould, but to have inferred it. What he did observe was a reddish stuff. From his previous experience of the stuff usually to be found on boots, he inferred that this stuff was mould. In the ultimate resort all that any one can observe with the eyes are certain more or less irregular patches of colour. It is not necessary to go all the length with

Binet, who maintains that all our interpretations of the ultimate elements of sense impression are rapid, unconscious, logical inferences. It is enough to recognize that the point where conscious inference begins varies with the individual.

The third essential to Holmes' wonder-working method may be gathered from the following concise criticism he passes upon a French colleague: "He possesses two out of the three qualities necessary for the ideal detective. He has the power of observation and that of deduction. He is only wanting in knowledge, and that may come in time."¹

Knowledge comes last in order, but it is first in importance. It is knowledge that directs observation, and gives it meaning. The story is told among the students of Professor Bell of Edinburgh, who, as everybody knows, is the original of Sherlock Holmes, that he one day astonished his students by declaring that a patient who had just come to the infirmary and whom none of the students, nor the professor himself, had ever seen before, was a non-commissioned officer lately pensioned off, after serving for some time in a certain island in the West Indies. The age of the man, his bearing, the angle at which he wore his hat, certain peculiarities of his civilian dress, accounted for the profession and rank of the patient; the West Indies and the certain island were indicated by the marks of the bite of a certain insect which is found only in that island. It is obvious that however much the students had observed those marks, they could never have

¹ *The Sign of Four*, p. 9.

guessed the island apart from this very special bit of knowledge.

"Precisely," says the observationist, "and that is why people should be trained to more general observation. Had the professor not observed that fact, the deduction would never have been made." We are thus brought face to face with the argument in favour of getting up facts for the use that may some time be made of them. Housewives have a foolish argument in favour of accumulating rubbish; it runs "Keep a thing for seven years and you will find a use for it." But if the observationist appeals to Holmes for justification in applying this principle to education, he will find himself hoist with his own petar. Holmes makes short work of this system of accumulation. He is not a very profound psychologist, and we shall attack his position directly; but the following statement¹ effectually disposes of the *omnium gatherum* theory of observation so far as he is concerned.

"'You see,' he explained, 'I consider that a man's brain originally is like a little empty attic, and you have to stock it with such furniture as you choose. A fool takes in all the lumber of every sort that he comes across, so that the knowledge which might be useful to him gets crowded out, or at best is jumbled up with a lot of other things, so that he has a difficulty in laying his hands upon it. Now the skilful workman is very careful indeed as to what he takes into his brain-attic. He will have nothing but the tools which may help him in doing his work; but of these he has a large

¹ *A Study in Scarlet*, p. 20.

assortment, and all in the most perfect order. It is a mistake to think that that little room has elastic walls and can distend to any extent. Depend upon it, there comes a time when for every addition of knowledge you forget something that you knew before. It is of the highest importance, therefore, not to have useless facts elbowing out the useful ones.'"¹

It would be hard to find a better example of the practical application of the Lockian principle than this eminently materialistic statement. Whether we regard it as the view of the clever detective or of the talented author, it is equally instructive as representing the view of Psychology held by intelligent but unphilosophic Englishmen. The mind is a mere knowledge-box of limited capacity. As soon as it is filled to a certain point, it begins to leak, and all further attempts to acquire knowledge can only result in the losing of knowledge already acquired. It cannot be denied that knowledge does decay, that facts do slip out of our reach, but it is not true that the mind is the poorer for that.

Leaving out of account the loss of knowledge which results from the physical decay of the system when maturity is past, it may be maintained without an undue appearance of paradox that this leakage of which Holmes complains is a positive advantage. It implies a losing of details, details which are a hindrance, not a help. Intellectual progress is a progress towards abstraction. A young mind or an untrained mind

¹ There is a curious parallelism between the above and certain remarks of Mr. Prickett on p. 129 of *A Dangerous Catapult*.

is full of pictured ideas, what are usually known as *images*. When a word is used, a picture arises in the mind. Somewhat more cultured minds generalize those pictures into what Romanes calls *recepts*. It is only in fairly well-trained minds that we reach what may be properly termed concepts. Now this process is one of decay. The ideas that perish are exactly the kind that Holmes laments, and they must die if the concept is to be free.

Another aspect of the same truth is to be found in the argument of the New Education in favour of the importance of forgotten knowledge. It is a huge mistake to suppose that the man who has forgotten something he once learned is in exactly the same position as if he had never known that something. However it may be with love, it is better to have learned and forgotten than never to have learned at all. True learning is really judicious forgetting. The great scientist is the man who has wisely dropped out of knowledge all the myriad facts he had to examine in order to come to his valuable conclusions. The master of style is all the better that he has forgotten the authors on whose style his own was formed. The mind is an organism, and between it and its contents there is continual reciprocal action and reaction. To Holmes it is a mere idea trap.

We are not, therefore, surprised to find Holmes as notable for his ignorance as he is for his knowledge. He knew nothing about the solar system, and had never heard of Carlyle.¹ His biographer has drawn up

¹ Though, if my memory does not deceive me, he afterwards quotes Goethe.

a tabular statement of Sherlock Holmes—his limitations.¹ In this statement we find the word *Nil* placed opposite Literature, Philosophy, and Astronomy. Politics is feeble, Botany variable, Anatomy accurate but unsystematic, while Chemistry is marked profound, and credit is given for almost unlimited knowledge of the history of crime. A good practical acquaintance with British Law is added, and boxing, swordsmanship, and violin-playing are thrown in as extras.

What does all this amount to but a statement that Holmes had acquired an exceptionally well-developed apperception mass of things pertaining to the detection of crime? But such a mass, regarded as a mere collection of knowledge, seems inadequate to explain the wonderful things that Holmes does. If it did, it is objected, brilliant detectives could be manufactured at our schools and colleges as easily as we at present manufacture government officials; for in this respect Holmes is merely an exaggerated sample of the popular process of specialized education. Holmes seems to feel this himself, and tries to explain his success as the result of his *method*.

“‘In solving a problem of this sort,’ says Holmes,² ‘the grand thing is to be able to reason backwards. That is a very useful accomplishment, and a very easy one; but people do not practise it much. In the everyday affairs of life it is more useful to reason forwards, and so the other comes to be neglected. There are

¹ *A Study in Scarlet*, p. 21.

² *Ibid.*, p. 215.

fifty who can reason synthetically for one who can reason analytically.'

" 'I confess,' said I, 'that I do not quite follow you.'

" 'I hardly expected that you would. Let me see if I can make it clearer. Most people, if you describe a train of events to them, will tell you what the result would be. They can put those events together in their minds, and argue from them that something will come to pass. There are few people, however, who, if you told them a result, would be able to evolve from their own inner consciousness what the steps were which led up to that result. This power is what I mean when I talk of reasoning backwards, or analytically.' "

From our point of view this passage is the most important in the Holmes Memoirs. If it be true, our educational system is at fault. If the power of synthetic reasoning is fifty times better trained than that of analytic reasoning, there is something radically wrong. But can it be fairly charged to our training that we are weaker in analytical than in synthetical reasoning? Is reasoning backwards really "a very easy" thing? Is there nothing in the conditions of the two cases that makes reasoning backwards more difficult than reasoning forwards? He is, indeed, a dull novel-reader who cannot ring the marriage bells for himself without finishing the final chapter of the third volume of an old-fashioned novel; but even Sherlock Holmes would find it difficult to accurately reconstruct the troublous scenes of the second and first volumes from the given result that they "lived happy ever after."

To pass from a "train of events" to a result is easier than to reverse the process, if for no other reason than that more data are given. If we know that a vessel came into Aberdeen in an unseaworthy state, that half of her crew deserted her there, that she was laden with cargo till she dipped below the Plimsoll line, that her captain in a drunken fit insisted upon at once setting out to sea, and that immediately thereafter a wild gale had arisen, none of us would have any difficulty in coming to a fairly accurate conclusion as to the result of the affair. On the other hand, the general reader, say in Glasgow, who is told in his *Herald* that the *Morning Star* has been lost, with all hands, would have little chance of filling in the drunken captain and the rest.

Even when a chain of facts is made up of links joined to one another in the most rigid logical relations, it is easier to begin with the elements and build up. No doubt we could teach the first book of Euclid by beginning with the forty-eighth proposition and working backwards; but we can hardly hope that teachers will adopt this method till at least its advantages can be made more evident than at present.

It was not because Holmes could reason backwards that he beat the ordinary Scotland Yard detectives. When one of them, Lestrade, saw the letters R-A-C-H-E traced in blood upon the wall, the only idea that rose above the threshold of his consciousness was the word *Rachel*, and he at once came to the conclusion that a woman of that name had something to do with the crime, and proceeded to make a hypothesis that would fit into this fact. He reasoned backwards as easily and

as accurately as Holmes himself, the only difference being that Holmes' apperception mass contained the German word *Rache*, which means *revenge*. Holmes was right, Lestrade was wrong; but it was not a matter of reasoning backwards or forwards; it was a matter of knowledge. Like Bain's wild beast, Lestrade sprang upon Rachel, because *Rache* did not present itself.

Holmes' method, indeed, is that of every scientific man in face of an unexplained fact. He gathers all the available information bearing upon the point at issue,¹ and allows all his apperception masses to act upon it. As soon as all the relevant ideas have presented themselves, the soul proceeds to arrange them in such a way as to produce the most harmonious combination. The process is, therefore, not purely analytic, as Holmes would have us believe, since its first step is the construction of a hypothesis which is a synthetic process. To make a hypothesis is really to discover a system of ideas in which all the given ideas will find a natural place. Holmes does not really analyze the whole of the material submitted to him, and pass by a regular series of deductions from the poisoned man to the poisoner. He gathers all the materials that mere observation can give, then casts about in his soul for a system of ideas that is, in itself, consistent with the nature of things as known to Holmes, and is not contradicted by any of the facts of the case in question. The analysis begins at the point when the hypothetical

¹ The store-room in which the facts are gathered corresponds to Galton's "Antechamber of Consciousness." See *Human Faculty*, pp. 203 ff., particularly p. 206.

system has been constructed, and is being broken up into its details in order that these may be compared, so as to show up any inconsistency.

What gives an appearance of mystery to the whole process, is the suppression of the guiding hypothesis till such time as the author sees fit to divulge it. The reader is led on from point to point, in admiring amazement at the acumen of the guide, who, all the time, has the enormous advantage of this enlightening hypothesis. No doubt the making of this hypothesis is in itself very creditable to the intelligent detective; but it is not at all wonderful or mysterious, when the content of his soul is taken into account.

Every soul, when working in a familiar line, habitually jumps over many steps in its reasoning; while a soul unfamiliar with that special matter has painfully to develop and examine each step. How often do we find the mathematician thrust in a *therefore* at a ridiculously early stage in the demonstration, with the result that the novice requires a couple of foolscap pages of explanation. To take a more concrete case:—

“When Captain Head was travelling across the Pampas of South America, his guide one day suddenly stopped him, and, pointing high into the air, cried out, ‘A lion!’ Surprised at such an exclamation, accompanied with such an act, he turned up his eyes, and with difficulty perceived, at an immeasurable height, a flight of condors soaring in circles in a particular spot. Beneath this spot, far out of sight of himself or guide, lay the carcass of a horse, and over that carcass stood, as the guide well knew, a lion, whom the condors were

eying with envy from their airy height. The signal of the birds was to him what the sight of the lion would have been to the traveller, of full assurance of its existence.”¹

Here it was not a case of reasoning backwards or forwards. The guide was familiar with the phenomenon. Fact and explanation are so closely connected that they cannot be kept separate. Once we know the full meaning of the little black speck in the sky, all our wonder at the guide’s cleverness vanishes. Holmes, you will remember, is always complaining that as soon as he explains how he comes to his conclusions, the wonder of his hearers disappears.

Any one can follow the facts once they are placed in their true relations. The point of interest for us is how Holmes manages to find out those relations.

We are apt to imagine from the narrative that the facts are known to all alike, to Scotland Yard and to the somewhat dull Dr. Watson, as well as to the brilliant Holmes. Under this assumption lies the fallacy that the “facts” are a fixed quantity independent of the minds apperceiving them. But the mind, in acting upon a fact, modifies it. There may be a world of brute facts, a residual world that exists apart from and independent of any knowing mind; but with such a world we have very obviously nothing to do. The only facts we can deal with are those which have been acted upon by our own minds. Observation, as popularly understood, professes to bring us into connection with this world of brute facts, and is sup-

¹ Quoted by Max Müller, *Science of Thought*, p. 8.

posed to have nothing to do with individual peculiarities.

Now here, in the accompanying diagram (Fig. 1), is a brute fact. What does observation tell us about it? What this brute fact means to my readers, I cannot pretend to say. To a class of young boys, experiment has taught me, it means a boat. To me, when I drew it, it was a square in a certain position. Even when the brute fact is given that it is a square, do all my readers apperceive it in the same way? A man ignorant of perspective will simply smile, and wonder if I expect him to believe my word against the evidence of

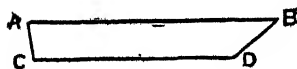


FIG. 1.

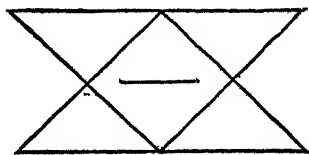


FIG. 2.

his own eyes. Those who know a little perspective will admit that it may be a square. Those who know more perspective will at once recognize that it is a square, in a plane parallel to the ground plane, placed a little above the level of the eye; that the eye lies between the two lines AC , BD , but nearer AC than BD and that AB is nearer the spectator's eye than is CD .

Is this difference in estimating the brute fact a result of observation? How long would a man who knew no perspective require to observe this brute fact in order to extract all this information from it? The difference lies in the mind, not in the brute fact.

Some of my readers, doubtless, have an uneasy feeling that all this is something very like quibbling, and may even feel inclined to say: "We are not talking of what the figure represents, but of what it is, as a matter of fact"; and mathematicians, with the assurance of their science, will settle the matter summarily by proclaiming that the figure is a "trapezoid, that and nothing else." From the voice of the mathematician there is no appeal; I cannot expect any one to take my word against his. The figure is not then a square, as I had supposed, but a trapezoid.

Let us try another brute fact. This time it is familiar to one section of my readers at any rate, so that I have some confidence in venturing upon a dispute with Mathematics. When I say that this diagram (Fig. 2) represents a certain kind of mending, known as a "cross-cut darn," I am sure that the public feeling among my readers will not allow Mathematics to bully me into saying that it is anything else. But somehow Mathematics herself is not so eager this time to interfere in the case, and when appealed to she answers with a very uncertain sound. She says it may be a square with four right-angled triangles; or it may be two large right-angled triangles partly coinciding with each other; or it may be two rhomboids also partly coinciding; or it may be one such rhomboid plus two right-angled triangles; or it may be an irregular hexagon with two re-entrant angles and an inscribed square. When pressed into a corner, this time she declines to decide which of those possible things it really is; it may be any of them, and we have to appeal from

Euclid to the sewing mistress to discover that the two rhomboids give the true state of reality.

But at this point our friend, the man in the street, strikes in and says that after all the reality of the diagram may be reduced to six equal black lines on a white surface with an odd line in the middle. But being a fair-minded man, this objector admits that the six lines must be arranged in a particular order to produce this particular kind of brute fact, and that the interpretation of those six lines must be left for the apperceiving mind. The geometrician's interpretation and that of the sewing mistress are both facts. They are entirely different, but they are both true.

It is worth while noting that the odd line in the middle, which the mathematician ignored and the man in the street disparaged, is the key of the whole position, the cause of the whole construction. It is the tear in the cloth that the sewing mistress wishes to repair. It is no doubt highly creditable to her that she so readily sees that the drawing represents a tear and two rhomboids of darning to mend it, but her knowledge is hardly wonderful or mysterious.

The little diamond panes that disturb us in church can fall at the word of command into groups of equilateral triangles, rhombuses, or hexagons, according to what we look for and expect to find. If I figure them as triangles, have I any right to say that my neighbour in the next pew is wrong in regarding them as hexagons?

Mere observation tells us that there are so many straight lines cutting each other at certain angles at certain places. How much of even this rudimentary

knowledge is contributed by the mind itself is a question that the best-informed psychologists answer with the utmost diffidence; but given this residuum of brute fact, there is no doubt at all that the mind does the rest. Says Hamlet:—

“Do you see that cloud that’s almost in shape like a camel?”

Polonius. By the mass, and ’tis like a camel, indeed.

Hamlet. Methinks it is like a weasel.

Polonius. It is backed like a weasel.

Hamlet. Or like a whale?

Polonius. Very like a whale?”

The groundlings laugh, and it is left for a German philosopher to discover that there may have been more Psychology than sycophantic agreement in the scene.

It is often said with a sneer by half-educated people that certain pictures are so good that common folks cannot see the good points about them till the artist, or a superior critic, comes along and indicates them. The sneer expresses a literal truth. A trained eye does see in a picture things that are quite invisible to the lay spectator. It need not be that the critic sees more in the way of mere lines and colours; it is merely that he understands what to look for, what to direct his attention to, how to combine what his senses present to him.¹

Every time that a hearer in church is charmed with

¹ This seems a better explanation than that supplied by Jacotot, *Enseignement Universel*, De l’Improvisation, p. 288. Of the artist he there says: “*Il remarquait qu’il avait remarqué: voilà sa supériorité.*” This corresponds to the Hegelian “bringing to self-consciousness,” and represents at least a part of the truth.

a new and unexpected rendering of a familiar text, he is having a lesson in the activity of the mind in the making of knowledge. Browning is reported to have said that his obscure poem "Childe Roland to the Dark Tower came" meant to every man exactly as much as he could take out of it. This poem has nearly as many interpretations as readers.

A certain clever inspector of schools, complaining of the exclusively bookish training given in our schools, made the remark—"Our children are treated like pointers: they are trained to bark at print." The education of actual experience is open to the same condemnation. We are all trained to bark at something; and, each in our own field, we can do wonderful things—not because our senses are keener, but because our knowledge is fuller and better arranged in our own special directions.

The doctor who calls on a patient for the first time sees no more than do the anxious friends who have sent for him; the only difference is that the brute facts of the case are no longer brute facts to him; he fits them into their places in a little cosmos that he carries about with him. Thoughtless people are apt to express this by saying that his powers of observation have been trained; but the obvious limit to this is that the resulting power is strictly confined to a certain class of facts. Outside of his own department a doctor is no more observant than other folks. Indeed, a doctor who gains distinction in other (not cognate) fields than Medicine, is apt to lose his patients and his practice.

It is related of Coleridge and two friends that, being anxious to leave a busy inn in a hurry, they tried to harness their horse for themselves. Everything went well with the three philosophers till they came to the horse's collar. This fairly brought them to a standstill. It seemed to be made on the most unphilosophical principles, and in spite of all their efforts could not be forced over the animal's head. It was not till the press of business had so far slackened as to allow the maid-servant to make her appearance, that they came to some understanding of the teleology of horse collars. She simply reversed the collar, slipped it thus over the horse's head, and then re-reversed it.

It would be silly to compare the maid-servant's brain with Coleridge's: the whole point lies in the fact that her apperception mass presented the problem in quite a different light from that in which it had struck him.

So constant is the relation between a given apperception mass, and the resulting reaction upon a given brute fact, that not only can we to some extent predict how a given mind will treat a given fact, but from the reaction upon a given fact we may make a fair guess at the apperception mass in question. Professor H. Steinthal, in his *Einleitung in die Psychologie u. Sprachwissenschaft*,¹ gives the following story:—

“In a railway carriage compartment sit in lively conversation half a dozen persons totally unacquainted with each other. It is a matter of regret that one of the company must get out at the next station. Another remarks that he particularly likes such a meeting

¹ Page 167.

with totally unknown folks, and that he never either asks who or what his travelling companions may be, or tells on such an occasion who or what he himself is. Thereupon one of the company says that if the others will not say what they are, he will pledge himself to find out, if only every one will answer him a quite irrelevant question. This was agreed to. Taking five leaves from his note-book, he wrote on each a question, and handed one to each of his companions, with the request to write the answer upon it. After they had given him back the sheets, he said, as soon as he had read an answer, and without reflection, to one, 'You are a scientist'; to another, 'You are a soldier'; to the third, 'You are a philologist'; to the fourth, 'You a political writer'; to the fifth, 'You a farmer.' All admitted that he was right. Then he got out and left the five behind. Each wanted to know what question the others had got, and behold one and the same question had been proposed to all. It ran —

“‘What being itself destroys what it has brought forth?’

“To this the scientist had answered, *Vital Force*; the soldier, *War*; the philologist, *Kronos*; the writer, *Revolution*; the farmer, *A boar*.

“That is the tale, of which I say that if it is not true it is remarkably well made up. The narrator further puts these words into the mouth of the political writer: ‘Just there comes in the joke. Each answers what first occurs to him, and that is what is most nearly related to his calling. Every question is a hole-boring experiment, and the answer is a hole through which

one may peep into our inner nature.' So the *Hæc fabula docet* is expressed in the form of practical knowledge of human nature. So we are all wont to do. It is easy for any one to know the clergyman, the soldier, the savant, the man of business, not only by the outward signs of clothing, bearing, etc., but also by what they say, and how they express it. We guess a man's position in life by what interests him, and how he shows his interest, by the objects of which he speaks, by his way of regarding, judging, and conceiving things, that is to say, by his way of *apperceiving*."

Perhaps we need not have gone so far afield for our illustration. Not long ago, in the Infant Department of one of our Aberdeen schools, a little boy was sent by the mistress to post a letter. So long did he remain away that anxiety began to arise as to the cause of his delay. With that free and easy interchange of opinion that unfortunately does not survive promotion from the infant room, the little ones began to console the mistress by suggesting various reasons for their companion's absence. Each suggestion was very obviously drawn from the personal experience of the little comforter who offered it, and each gave some indication of the mode of life of the speaker. But the typical case was that of the little fellow who suggested that the absentee was delayed by the difficulty of "licking the stamp off, clean." You will not be surprised to learn that this pessimist was the son of a wandering tinker who had taken up a very temporary abode near the school.

All teachers are aware that every answer a pupil

gives is an indication of what goes on in his mind. The fundamental mistake we are apt to make is to neglect this aspect of the matter, and to act as if each answer had only an absolute value in itself, in relation to an absolute outside fact. The question of questions for a teacher must be "How does this strike my pupil?"

In his recently published *Studies of Childhood*, Professor Sully¹ lays stress on the folly of parents who take young children to see landscapes from favourable points of view. He shows that the child *cannot see* the view as a whole; he has not that sense of freedom that distance and wide expanse always bring to an adult. The child merely picks out some prominent feature, usually close at hand, and almost invariably of no interest to grown-up folks, and pins all his attention on that. The whole progress in knowledge is from a vague unseen to a clearly seen whole. The educator who seeks to cultivate observation by supplying materials to gape at, does not know the rudiments of his art. True observation is the offspring of interest and knowledge.

We observe easily what we are interested in or what we already know something about, so the teacher in seeking to train observation must give up attending to the keenness of an eagle's sight and the delicacy of a dog's sense of smell, and turn to consider interest and knowledge.

A professor who is a passenger on a sailing vessel has been admiring the keenness of observation of the sailor on the lookout. But when he and the sailor are reading the most recent available newspapers in the

¹ *Op. cit.*, p 306.

twilight, the surprising phenomenon occurs that the eagle-eyed sailor is the first who has to give up on account of the failing light. A few questions and a little thought explain the whole matter. In the dusk the sailor could still more than hold his own in the way of distinguishing objects in the ship or even in determining the number of dots in certain spaced-out advertisements, but in the actual reading the professor was clearly ahead. The sailor's sense impression was keener, but the professor, so far as reading went, was the better observer.

Interest and knowledge are too important to be treated satisfactorily at the end of a chapter; in the meantime it is enough to remark that they mutually determine and react upon each other. In view of this, the teacher's first duty is to ascertain the contents of the mind of his pupils, and then to bring within their reach materials specially prepared for those minds to react upon. Children can observe only what their apperception masses are prepared to act upon; to all else they are literally blind, deaf, callous.

To cultivate observation, then, is not to train the eye, the ear, the hand, to extreme sensitiveness, but rather to work up well-organized knowledge within the mind itself. If we desire minute observation in a definite direction, we must cultivate special knowledge to correspond. If we wish to encourage *general* observation, we can only succeed by cultivating wide interests.

The reciprocal interaction of interest and knowledge in relation to external facts, is what ought truly to be called observation.

CHAPTER VII

THE LOGICAL CONCEPT AND THE PSYCHOLOGICAL

ONE need not be greatly ashamed at not knowing Isaac Habrecht. He is not exactly what might be called a famous man. Indeed, the only positive information that I can give about him at this moment is that he lived at Strasburg in the early sixteen hundreds; and was not like Charles the Second. For Isaac once said a foolish thing. Professor Laurie makes him responsible for the following: "One would learn to know all the animals of the world more quickly by visiting Noah's Ark than by traversing the world, and picking up knowledge as we went."¹

Without professing too intimate an acquaintance with honest Isaac, we may on the ground of this assertion fairly charge him with intellectual greed. In learning as in commerce, there are those who go wrong by hasting to be rich, and in both cases the results are often disastrous. If Isaac merely meant that it is easier to arrive at the names of animals *via* the Ark, his remark might be readily passed; but from the school to which he belonged we know that he aimed at more than that, and by reaching at too much he would certainly have lost all, had he been favoured with a free pass to the Ark. For of all places in the world a wild-

¹ Comenius, p. 32.

beast show is the last to which a reasonable man would go to acquire a true knowledge of animals. A lion in a menagerie labours under nearly as great a disadvantage as does a fine picture in a picture gallery.

No respectable boy who has made his first acquaintance with the king of beasts in the stirring pictures of his Standard II. Reader, will recognize him in the mangy overgrown dog that growls over its shreds of putrid flesh behind the bars of the sordid caravan cage. The boy is right. Of the two, the paper lion is truer to life. No doubt the caged animal does convey some real knowledge of details, — form, size, colour, and the like; for degrade him as you will, he is a lion for all that. But we have emancipated ourselves from the dominion of mere brute fact. What we see behind the bars there is only a part, and by no means the most important part, of what holds a place in our minds as a lion. Had Isaac had an opportunity of visiting the Ark, he would have had to bring with him a great deal more lion than he found there.

This Noah's Ark teaching represents a noble idol of the school. The pupil is taught to play the part of a little Adam, and all the animals are brought before him to see what he will call them. If he can give them the names that the master is accustomed to, all is well. Good educational work is supposed to have been done. A child who has seen a camel, and who can recognize a camel when he sees one, is regarded as knowing the camel. In a certain aspect this view is right. It is the opposite of that which insists with wearisome iteration of having "things, not words." Neither things nor

names must be raised to a place of absolute importance. Neither by itself is useful to man as a rational educable being. Suppose a boy to know all the animals in the Ark by head-mark without knowing the names of any, is he much better off than the boy who knows all the names of the animals, but cannot distribute his names properly? The truth is that name and thing are of precisely equal value in education : each by itself is naught ; each owes its importance to the other. The lowest step in knowledge is the unifying in one idea the name and the thing. Till this has been done, no progress can be made. In the Ark there must be no lack of old-fashioned courtesy. We must not address ourselves to the animals without being properly introduced.

Once this formality has been gone through, and we know to whom we are speaking, the acquaintanceship may be cultivated in two totally different ways. When we are thrown into a new circle of acquaintances, we study them after two distinct fashions. We may consider each man by himself, note all his mental and physical qualities, and strive to understand his character. On the other hand, we may pay little attention to the man himself, but may carefully look up some book when we get home — *Debrett* if he is a really fine specimen, *Whitaker* if he is only respectable, and the City Directory in other cases.

Now, who shall say that a public dinner or ball is the best place to arrive at a speedy knowledge of those human beings we are thus studying? No one can fail to note that men and women in such surroundings are

not their natural selves, yet Isaac calmly assumes that the animals in the Ark were at their ease. What could be more unnatural than the sight that "Juveniles under twelve" are privileged to see for sixpence? Wrenched from their true environment, and thrust into another, full of incongruities, none of the animals appears at its usual, not to say its best. The elephant alone, and perhaps the camel, retains some degree of naturalness, maybe because he is big enough to supply a sort of environment for himself.

For the former of the two kinds of knowledge referred to above, the Ark certainly offers distinct facilities. We can examine each animal in great detail, we can compare one animal with another, we can classify them, and, crowning glory, we can be prepared to be examined upon them. So far as the minute study of each individual animal goes, Ark education is perfectly sound; for each fact in Anatomy or Physiology is not an isolated fact, but a fact which finds a place and an explanation in the organism in which it is found. The hard leathery pads on the camel's legs, for example, and its humps, can be to some extent at least explained by discovering their relation to the other parts of the animal's frame. The finger at the end of the elephant's trunk readily demonstrates its own place and usefulness in the elephant's organism.

Can the same be said of the animal as a whole? Itself an organism, and therefore a harmony of parts and forces, it can explain any part of its being by the simple expedient of merely living. Any question regarding the members or functions of the elephant's

body is readily answered by a good-natured *solvitur ambulando*. But while the organism can explain its parts, can it explain itself? The elephant which can combine into an organic system all the forces which its life implies, is itself but part of a higher organism which the elephant cannot explain, but which must rather explain the elephant. To know the elephant as part of this higher organism, we must see it acting as a member of that organism. We must, in other words, study the elephant in its natural state, and amid its natural surroundings.

This, then, is the great defect of Ark education. It tears away objects from their natural surroundings, and thus renders them meaningless; then it tries to make up for this loss of meaning by studying with great elaboration the details of the objects thus unnaturally isolated. The ever-ready objection is here at once brought forward: it is said that it is impossible to include such a wide sweep as a full explanation of anything would demand. The teacher may naturally hesitate to enter on his requisition sheet to his board, under the head *Apparatus*: "Two elephants with jungle, complete." But while the absurdity of this demand in practical education is cheerfully admitted, its reasonableness from the theoretical standpoint may be sturdily maintained. If the elephant is to be truly understood, the jungle with all its accessories must be supplied. The only other way, and a much better one, is to apply the lesson of the story of Mahomet and the Mountain. If the teacher cannot supply a real jungle as well as a real elephant, then

the pupils must seek out the elephant in his native wilds. This "traversing the world" is not so expeditious a plan as visiting the Ark, but it is the only way in which true knowledge may be "picked up."

To be sure, a child may fare exceedingly well in this world without visiting either the Ark or the jungle. But the comparative insignificance of the elephant as an object of knowledge in no way diminishes the importance of the educational principle involved. For this Ark education is by no means limited to the study of the beasts that went in by their twos and their sevens. Museum teaching of all kinds comes under the same condemnation. Most of us have laughed all the freshness out of the story of the man who carried about a brick as a specimen of the house he had for sale. Yet the same old joke, from that serious side that every joke has, is being played every day upon our helpless pupils. Half of the contents of most museums are veritable bricks from houses that none of the visitors ever has seen or is likely to see.

The present outcry for school museums may be regarded as a latter-day tribute to old Isaac's theory of Ark education. The heaped-up curiosities in the spare room of a school may be supposed to save the pupil the labour of wandering about to pick up knowledge for himself. If this be the view adopted, it ought to be a matter of rejoicing rather than regret that distinguished advertisers are beginning to find the demands of teachers too costly to be met. It is to be remembered that a museum is a place for instruction of one kind only, and that not the most important. Its

place is not at the beginning of a study, but at the end. Can any one imagine a more dreary way of beginning the study of Botany than to pore over a book of dried specimens? To the boy who has collected plants, who has seen them in their natural state, the book may be both interesting and instructive. But to introduce a boy to Botany in this way is as irrational as to commence a student of Psychology with an examination of the Mummy Room in the British Museum. The study of detail which a museum favours can only be profitably carried on when the place in nature of the object studied has been clearly grasped.

If school museums and schoolboy collections alone were involved, no great harm would be done. But Isaac's Ark teaching is by no means confined to Zoology. It permeates the whole school system. The teacher is forever preparing his little list of specific gravities, or genders, or constitutional changes, or words sounding the same but spelled differently. These are all little arks, each with its more or less choice selection of animals which can be thus more quickly known than they could be had the pupil to find them out for himself in their natural place. Yet, after all, those collections are only little arks, mere local branches of the great Noah's Ark that dominates all schools. For Isaac has not been left without successors who have marched with the times. The short cut to knowledge is not the menagerie or the museum. The Ark of Arks in education is the dictionary. There they lie, those queer verbal beasts, arranged, like their prototypes in the real Ark, not according to their true nature, but according

to an arbitrary system that happens to suit the convenience of dictionary makers. There they lie, the haughty *Hagiolatry* beside the humble *Hag*, the awe-inspiring *Abracadabra* cheek by jowl with the artless *Abroad*, just as in the genuine Ark the lion may have occupied the next berth to the lamb.

We have reason to know that Isaac strongly approved of the dictionary system, as a means of saving time. The plan is not a good one. I have special reasons for knowing this. A boy with whom I am particularly well acquainted tried it. In the youth of the individual, as in the youth of the race, there is a strong liking for heroic methods. Some hunger for dragons to slay, others would be content with Boers. The dictionary was good enough for John.

With that keen eye for short cuts that characterizes every respectable schoolboy, John observed that he had to waste a great deal of time in looking up the same word again and again in the dictionary. The annoyance of having to turn up a word only to recognize it as an old friend the moment he had got the place in the dictionary, was so great and so frequently repeated that he cast about in his mind for a remedy. Then an unfortunate remark of his teacher occurred to him. It was not a strikingly original remark, but John was not overcritical at that stage. It was something to the effect that the quickest way, in the long run, was to learn each thing perfectly when one was about it at any rate. There were more remarks about an invading army in a hostile country, and fortresses that could not be left untaken in the rear; but John instinctively knew

that this was not of any consequence. He was quite clear on one point, — that if once he had conquered the dictionary, he would be saved an intolerable amount of turning of leaves during Latin preparation. So he faced his gigantic task, and tackled his dictionary. It was Smith's; not, of course, the bigger one, but the one you get for seven-and-six. When John started, he felt almost sorry it was not the larger one. When one is doing a thing thoroughly at any rate, it seems a pity not to do the biggest as well as the best. The regret did not last long. Nor did the experiment. John never seemed to have much to say on the subject during the remainder of his school-days. Of one thing he was quite convinced, — that all the interest of his experiment fell to the lot of those who stood by and looked on. It was from that date that John began to attach a meaning of his own to the popular paradox, — the longest way round is the shortest way home.

What John ignorantly but gallantly attempted, is set as a sober task to our pupils at school. I do not refer to the inhuman proposal of Comenius that pupils should be made to learn by rote, before beginning Latin, a lexicon of one hundred *folio* pages. We have got beyond absolute barbarism. It is admitted now that the whole Ark is too heavy a burden; so various subsections are marked off to be conquered in turn. To learn lists of "meanings" is only a new, a Napoleonic, way of mastering the dictionary. But words, like animals, refuse to be understood when examined through bars or under glass cases. From the dictionary we may learn all about their size, their form, their spell-

ing; we may wallow in derivation; but the dictionary can only give a few vague equivalents from which we may draw a sort of average meaning; or it may give a long list of special technical meanings. In no way can we attain to a command of the word, save by using it and hearing it used by others.

It is a natural criticism that interposes here with the question: surely the master cannot be blamed for seeing that his pupil understands the meaning of the words he uses. It may be asked "Can a pupil be supposed to know, in the sense of understand, a word of which he cannot give the meaning?" The answer is an emphatic *Yes*. Most people in the world use freely and intelligently words that they cannot in any way define. Take a Junior class, and ask the meaning of *No*. After the first pitying smile at such an easy question has passed away from the faces of the youngsters, it will be succeeded by a sheepish expression which gradually gives place to a distinct uneasiness when it is found that the wretched little word has more fight in it than they had bargained for. I shall be surprised to learn that a single child in the class is able to give a correct answer. Are we, then, to assume that the class does not understand the meaning of *No*? The question cannot be taken seriously.

By examining the "meanings" offered by the children in their vain attempt to define the word, we may get a clearer idea of how a word may be understood while defying all the attempts of the user to reduce it to a clear isolated expression. Some of the meanings offered during an actual experiment were: "Not to do it"; "None of it"; "Not to go"; "You won't

‘give me leave’; “Less than one.” All these expressions (except perhaps the last, the work of a clever arithmetician) imply a previous expression which they negative. Every child obviously knows when to say *No*. In other words, the pupils can use the word, and can understand it when used. What they cannot do is to separate it from its context and place it in a museum of words, in a dictionary.

↑ This definition test, practically the only one in many schools, does very serious harm. After using a word easily and naturally, a child may pass to an intelligent definition of it; but to pass from the definition of a word to the intelligent use of it is by no means so easy. No doubt one gets to the definition meaning of a word more rapidly through the dictionary than through using the word, but the definition meaning is practically useless to the child. It is an empty generalization useful only to those who have already at their disposal a large stock of experience bearing upon the word. It is an unwise haste that loads a child’s mind with meanings that his experience cannot make real. We cannot hasten a child’s development by saving him some of the trouble and labour of arriving at generalizations. Each child must work for his own generalizations, just as each child must eat for his own nourishment. *Festina lente*, say some educationists, should be printed in letters of gold over the door-posts of every school-room. School-board members will be glad to learn that the ratepayers need never be called upon for this enormous outlay. The teacher has no need of the golden sign-board. Its advice is no doubt of the best. But nature

takes care that her best advice is attended to without the formality of a sign-board. We cannot do other than hasten slowly. Rousseau put the same truth in a slightly different way when he told teachers that the most important lesson for the teacher of young children was how wisely to lose time. So far from hurrying his pupils off to the Ark, Rousseau would deliberately set them off on their travels to traverse the world, if by any chance they might pick up a first-hand acquaintance with the animals in their natural states. He who would save his time, must lose it.

At the bottom of this foolish hasting is the misconception of the place of childhood in human experience. Besides being a stage towards a fuller development, childhood is an end in itself; it has its place and function in nature apart from the manhood to which it forms an introduction. "What is a boy?" is the question with which the philosopher in the story staggered the nurse who had come to proclaim the joyful news: "It's a boy, sir." She was unprepared with an answer, and too many teachers share her embarrassment. Underlying all our notions about boys lurks the misleading definition: "A little man." Now this is precisely what a boy is not. He is no more a little man than a tadpole is a little frog, or a grub a little butterfly. It is only in some of the old masters that we find a boy drawn as if he were merely a man set out on a smaller scale.

The evil effects of this little-man theory are seen in the practical view of education. Your practical man looks with regretful respect at the little chick that proceeds straight from its egg to its first lunch, then he

turns bitterly to compute the long years that must be wasted before his own offspring can, as he says, "come to anything." It is only after years of earnest endeavour that he gives up in despair the attempt to put old heads on young shoulders.

The fallacy of saving the time of the pupil is matched by a not less dangerous fallacy which has of late been coming into greater prominence since the first fallacy has been more or less completely exploded. This second fallacy lies in the desire to save the children trouble. If the poor little beggars must spend such an unconscionable time before they can begin the real business of life, let them at least have as much pleasure at school as possible. To this every well-conditioned teacher will utter a loud *Amen*. It is in the foolish way in which this happiness is sought that the danger lies. Labour-saving appliances are so common, and so eagerly sought after in ordinary life, that it is little to be wondered at that the same craving should arise in connection with school work. It seems eminently sensible, not to say humane, to save children as much labour as possible. But it is necessary for parents and teachers alike to remember that children are not sent to school to be saved trouble, but to be taught how to take trouble. *Taking pains* is one of the main things to be learnt at school.

The circumstances of the school-room are not those of ordinary life. In the farm and the workshop the thing to be done is the important matter, — the corn to be produced or the plough to be made. So long as the corn is good and abundant, and the plough well-made

and serviceable, the less labour spent in their production the better. In education the conditions are reversed. The process is everything, the material result nothing. A blotted and blurred copy-book is not, in itself, of any value. Yet it may be a record of very successful teaching. There is a danger of this distinction being overlooked in the most unexpected quarter. Every one who knows anything of the principles upon which the kindergarten system is founded must be surprised at the pernicious practice — fostered, if not created, by school-shows — of regarding the work of children as in itself valuable. It is not to be forgotten that psychological principles demand that the hideous erection of matches and soft peas must be regarded by the little architect as an end in itself. If this were not so, the work towards that end would be in vain. To work for the mere sake of work is unintelligent, meaningless. The child only does his best when he earnestly desires to attain an end, even though that end be but an amorphous mass of whitish clay that a complaisant teacher is willing to recognize as a pear. It is one thing, however, to recognize this ceramic fruit as an educational end, and quite another to admit that it has any value in itself. It is true that some of the kindergarten paper work and drawings are in themselves pretty enough, in their childish way, to deserve attention on their own merits. But with regard to such objects two things must be observed. First, that the beauty of the result has no relation whatever to the value of the work which produces it. Secondly and chiefly, that a consideration of the results in themselves gives rise to a

strong temptation to neglect the most profitable ways of attaining results, and to adopt easy methods of producing striking but uneducative results.

This has been the case in dictionary work. The aim has been to get up as many words as possible. The dictionary is obviously the most convenient place to find words. Lists, vocabularies, thesauruses, and sylvas have been prepared and gobbled. Time and trouble are both saved, and it is only those who have looked carefully into the matter who have been convinced that the results of the Noah's Ark method are rotten at the core.

It goes without saying that the dictionary has a place in education, — a place in which it can do admirable work. If Noah's Ark were at this moment available for school purposes, he would be, indeed, a foolish teacher who did not avail himself of the opportunity; but he would not take his pupils there in order merely to save time and trouble. We must work up to the Ark, not down from it. We must go to the dictionary to find the meaning of words we have actually met; we must not go to it as to an armoury of words where we may choose what is best suited to our purpose.

Most people do not recognize Hans Sachs as a poet of the first rank. But if any are in doubt about the matter, they will no longer hesitate after seeing the picture at Nuremberg, in which he is represented as marking off with his fingers the feet of the verses. This is not the way true poetry is made. Fingering is as fatal in poetry as in the infant room. Your genuine Noah's Ark poet goes a step higher. In his case the

numbers, indeed, come; it is the rhymes that trouble him. There is a question that must have arisen at some time or other in every thinking mind—who buys the rhyming dictionaries? We hear of such books, and we see them advertised. Has any of my readers ever seen one of them in actual use? Can the Poet's Corner in local newspapers, the Young Ladies' Album of verses, the literature of St. Valentine's day and Christmas time, and the needs of the desperate advertiser account for the consumpt? Or must we include a certain number of copies as belonging to the regular army of Parnassus, the genuine poets? The biographers of those men are strangely silent on this point; but in the absence of positive evidence to the contrary, we may safely follow our natural impression, and repudiate any such aid in the making of *In Memoriam*, or even *The Lady of the Lake*. The rhymes, like the numbers, must "come," if there is to be genuine poetry.

The rhyming dictionary is an excellent illustration for our purpose, since it can only be used in the way we object to. No one consults it save to get words to use, and when found, the words are not the servants of the word-hunter, but his masters. You cannot dig poetry out of a dictionary. Oliver Wendell Holmes makes merry over the algebraic lines:—

-	-	-	-	-	-	-	youth.
-	-	-	-	-	-	-	morning.
-	-	-	-	-	-	-	truth.
-	-	-	-	-	-	-	warning.

Yet the bald rhymes and the threadbare thoughts represented by the dashes, indicate as a rule better

sense than your schoolboy can produce when let loose upon a dictionary. The legitimate and the illegitimate use of the dictionary may be very clearly illustrated by the English-Latin and the Latin-English sections of school lexicons. The former goes from the known to the unknown, it is true, but it does not show the way. The boy knows all the words in a given Latin sentence except the word *genus*. He looks up the word and finds a crowd of meanings, among which he sees that *kind* is the one that fits into his sentence. If, on the other hand, he is driven to look up the word for *kind* in an English sentence dealing with a *kind father*, etc., he gets a variety of unknown words all equally meaningless, and the chances are strongly in favour of his passing over the clumsy *benignus* in preference for the simple *genus pater*. He is a fortunate teacher who has never in his manuscript reading come across this pleasant old gentleman.

We may not go quite the length of Professor Ramsay of Glasgow, who used to invite a bonfire of English-Latin dictionaries after the pattern of the magic-books of the Ephesians; but all wise teachers will make a rule that no boy should ever be led into the temptation of using a word he has not had occasion to see in actual use.

As a matter of fact, the dictionary meaning of a word is only one out of many meanings. The word *man*, in its dictionary sense, means a *rational animal*. When the young scout who has been left to keep guard while his fellows do a deed of daring, calls out, "There's the man," does he mean "There's the rational animal"? Does he not rather mean "There's

the animal that can hurt"? Yet you will search the best dictionaries in vain for any hint of this meaning of *man*.

A reasonably stout dictionary will give a great list of the different meanings of *man*, but the number of meanings given is as nothing compared with the number of meanings not given. The word varies in meaning with almost every sentence we use. This truth may be expressed by saying that the unit of meaning is not the word, but the sentence. Those fond of reasoning by metaphor will be pleased with the statement that the sentence is not a mechanical mixture of a certain number of independent words, but is rather a chemical compound in which the elements (in this case words) acquire an entirely new character, through their relation to the whole. Substituting a plain statement for the metaphor, we may say that the sentence is the organism in which the individual words find their true meaning because they find their true place. In the dictionary the word is wrenched away from this combining and explaining whole, and accordingly becomes to a large extent meaningless. Even when we happen to discover the meaning of a word from the dictionary, we find that we are really supplying, more or less unconsciously, a context. To treat a word apart from any context is to reduce it to nothing.

"As when we dwell upon a word we know,
Repeating till the word we know so well
Becomes a wonder, and we know not why."

The poet does not know why, and does not want to know. To him the luxury of ignorance is possible;

to the teacher it is denied. There is, indeed, little mystery about the matter after all. By constantly thinking about one word, we tend to make it an object of our undivided attention. It is separated from its context, it loses its relations, it becomes a thing in itself, and as such disappears from our intelligence altogether. Determination is negation; absolute determination is absolute negation.

Obviously there must be in this rational world of ours a place and function for the dictionary. To deny this were to fly in the face of common sense itself. Did not Johnson write a dictionary? Nor is it so difficult, after all, to mark off the sphere of such books. The word as found in the dictionary represents one aspect of the truth; as found in actual use, another. The concept that the word represents may be regarded from two totally different points of view. We have the logical and the psychological concept. The word *crab*, as I use it in ordinary conversation, represents a psychological concept; as found in the dictionary under the letter C, it stands for a logical concept.

Are there, then, two different concepts corresponding to the word *crab*? Certainly not; there are not two different concepts, but a million, a score of millions, as many concepts, indeed, as there are conceiving minds. What, then, becomes of the dictionary in which only one or two meanings are given, or, in aggravated cases, perhaps a score? The reply is that while there are myriads of psychological concepts of *crab*, there is only one logical concept. Psychologically considered, the word *crab* represents a concept peculiar to the person

using it. This concept must be more or less like the concepts of *crab* formed in other minds, and is probably very like the concepts to be found in the minds of those with whom the person in question comes most in contact. On the other hand, the concepts may vary enormously, if we take the cases of minds whose apprehension masses have little in common. A Worcester-shire peasant, a Yarmouth fisherman, a London policeman, a West-end gourmet, a member of the Fishêry Board, an evolutionist philosopher, and a primary school boy have all concepts of *crab*; but could all those concepts be actualized, the results would be startlingly unlike. The very crabs would not acknowledge each other. How, then, are we to know what a crab is, how decide which of those queer concepts is legitimately entitled to the name it claims? Is there a standard crab?

There is a general impression that there is a standard, but where to find this standard is a question that annoys even philosophers. This is no end-of-the-century, up-to-date problem. It has worried philosophers as far back as Plato at least. His answer, while in many respects beyond reproach, lacks that element of practical applicability that modern solutions must have. He may be right when he says that the perfect pattern of the crab is laid up in heaven;¹ but pending fuller investigations there, we find it easier to fall back upon the dictionary. The pattern we there find may not be perfect; but it is usually clear, definite, and open to inspection.

¹ Cf. *Repub.*, X. 597. Plato's illustration is a *bed*, but this does not affect the argument.

You remember how Cuvier treated the puzzled dictionary makers when they brought for his criticism their meaning of *crab*, — “A red fish that walks backwards.” Like the courteous gentleman he was, he told them that theirs was an excellent definition, only the crab “was not red, was not a fish, and did not walk backwards.”

Why was the laugh on Cuvier’s side? What was the standard by which he so ruthlessly demolished the suggested definition? No one seems to question his right to speak with crushing authority on such a subject, yet, it may be asked, had the dictionary men nothing to say for themselves? Suppose Cuvier had given his *brachyurous*, *decapod*, *podophthalmatous* *Crustacean*, and the dictionary men had adhered to their *red fish that walks backwards*, who is to decide between them? Were a world-wide poll to be taken on the subject, which of the two definitions would enlist more sympathy?

The fact of the matter is that all such definitions are, to some extent at least, arbitrary. There is no special reason why an insect should have just six legs, as the definition insists upon its having; yet if I can bring forward a ringed animal with a body divided into three distinct parts, with antennæ, wings, tracheæ, and all the rest of it, down to the part that demands three pairs of legs springing from the thorax, and at this point fail to satisfy the requirements, my otherwise satisfactory animal will be firmly refused a place among the insects. The taxonomist can never go wrong, for the patent reason that he is by hypothesis always right.

If he decrees that all insects have six legs, and an insect comes along with eight legs, he very properly rules it out of court with the unanswerable argument: "All insects have only six legs. This pretender has eight legs. Therefore this pretender is not an insect."

If we ask what authority the definer has for his major premise, he need only reply that this is the hypothesis on which he works, and no more can be said. Cuvier's friends might have adopted the same plan and adhered to their *red fish that walks backwards*, and if they could produce any animal that fulfilled the terms of their definition, no objection could be taken to it. But when it is applied to an animal that can be brought into evidence, the definition falls to the ground on being contradicted by facts. Yet even here the dictionary makers may attempt a last defence. Something is wrong, they are prepared to admit; but which is in fault, the crab or the definition? In actual practice it is the animal that is always put upon its defence, the definition taking the place of judge. But the definition, in its turn, is supposed to have owed its birth to the comparison of a great series of crabs and similar crustaceans. Before the definition was made, every crab examined had a voice in the determination; once the definition has been made, each new crab must fulfil the conditions or forfeit its name. But while the original definition-forming crabs influenced the decision, it was only passively; the definition was actually made by the thinking mind. God made the crab of the sea-shore; man made the crab of the dictionary.

Generally speaking, the crabs of the sea-shore are

good-natured enough to agree very closely with the dictionary crabs (though there is far more individuality within the carapace of a crab than any one who has not dissected a few would imagine); but there are many other words in the dictionary that cannot be put to the test of external comparison, and which are therefore regarded as absolutely fixed, while there is the greatest possible elasticity in their meaning as actually applied. Words, as found in actual use, may be divided into two great psychological classes, as transitive and substantive. The latter we can pause upon and consider; the former are always upon the wing. The distinction does not correspond to the parts of speech, and has little to do with grammar.¹ Every one knows that in a sentence there are natural pausing places, not for the voice merely, but for the thought. The subtle power of emphasis gives force to this distinction, and indicates possibilities of meaning that no dictionary can ever hope to convey. The words of the dictionary are indeed symbols of thought, but of thought reduced to its least common denominator, so as to be more easily compared with other thoughts.

The dictionary meaning may be compared to the skeleton of the full meaning: something fixed and definite, to which each person who uses it adds his own special flesh and blood. At the end of each dictionary

¹ Being a purely psychological distinction, this aspect of the meaning of words cannot appear in a dictionary. A given word may in one sentence represent the transitive part of thought, in another the substantive. Cf. some extremely interesting observations on the subject in W. James, *Principles of Psychology*, Vol. I. 243 ff.

definition may be added the words "At least." *A man is a rational animal, at least. An island is at least a piece of land wholly surrounded by water.* The dictionary maker hopes, by thus limiting his meanings, to establish uniformity. But such an absolute agreement as the dictionary hopes to establish is impossible. All men agree that man is a rational animal, but immediately arises the question what is *rational*, and what is *animal*. These words convey a different meaning to every one who uses them. The very words, therefore, that seek to bring A's idea of a man into strict conformity with B's are in themselves instruments to differentiate the two meanings.

Science has been defined as nothing but a well-made language. May we not, without putting an undue strain upon the words, say that education consists in the making of dictionaries? For each of us makes his own little dictionary, which agrees more or less with those of others. Pupils in the same school and belonging to the same class of society naturally have dictionaries that correspond pretty closely to each other. The farther people are removed from each other in the circumstances of their life, the greater the difference between their internal dictionaries. To such an extent does this go that people speaking the same language, and using the same words and constructions, may be at a loss to understand each other. Mark Twain gives an excellent example of this in the interview between a rough miner and a clergyman whom the miner wishes to conduct the funeral service of a fellow-miner. "Are you the duck that runs the gospel mill next

door?" begins the miner. This is clearly English — the words are all Saxon, and the construction is perfectly straightforward. Yet the clergyman can make no sense out of it. When the clergyman replies, it is the miner's turn to shake his head. The religious dictionary is as 'hard for the miner as the mining one is for the minister. Slang and dialect are only exaggerated forms of this universal system of private dictionaries. Every household has its own list of special meanings.

In the case of households and communities it can be demonstrated that words are used in special senses. In the case of the individual there can be no proof either way by direct demonstration, but the wise teacher will not be hard to convince, though he may be slow to apply his conviction. The standard dictionary, then, must be treated as the *terminus ad quem*, not as the starting-point in education. The pupil must first learn to use his own private internal dictionary, and then learn to compare and correct it with the standard dictionary.

CHAPTER VIII

A NEGLECTED EDUCATIONAL ORGANO

THE well-known headmaster of one of the most important schools in London, speaking of the training of teachers one day, made the startling remark : " All that a teacher requires is a knowledge of his subject, and a sense of humour."

Every epigram has enough truth in it to justify its apparent impertinence. The truth here lies in the second requirement. We are not so easily satisfied as this headmaster; we want more than a knowledge of the subject and a sense of humour. But we cannot rest satisfied till those two conditions are fulfilled. The epigram owes its point to its insistence upon a very unusual requirement. For of all men in the world a schoolmaster is the last to whom popular opinion will concede any degree of genuine humour. It takes the sublime charity of Wordsworth to describe an old schoolmaster as

"The gray-haired man of glee."¹

Even Goldsmith, the genial, cannot help rhyming :

" Full oft they laughed with counterfeited glee
At all his jokes, for many a joke had he,"

¹ *Poems of Sentiment and Reflection* : "The Fountain."

and an appreciative world hails the picture as true to life. The philomath of Sweet Auburn stands condemned at the bar of public opinion, and it is only schoolmasters who care to ask *why* the glee was counterfeited. Were the jokes poor in themselves, or were they too old to command genuine glee? Probably both; for "many a" is strangely suggestive of a fairly large, but distinctly definite, number, while the "had he," implying possession, hints at a cistern rather than a fountain.

The question of quality is readily settled by a reference to Lamb, who has given an authoritative decision, telling us in cold blood: "The jests of a schoolmaster are coarse or thin. They do not *tell* out of school."¹

To the charge of age we may find it convenient to plead guilty. Most of us have our "Grouse in the Gun-Room." But Lamb's criticism demands different treatment. To begin with, Lamb, while an unimpeachable authority on joking, is a distinctly biassed judge. Looking all through the range of literature, I do not think I can find a man who has less sympathy with the pedagogic spirit.

Why should a schoolmaster's jokes be coarser or thinner than those of other men? As we are pleading our cause only to ourselves, we may as well be honest and admit that our jokes are not commonly of the best, and do sometimes, under special provocation, become a little coarse, from an artistic—not a moral—point of view. The cause of all this lies on the surface. We have an audience ready made, who

¹ *The Old Schoolmaster and the New.*

must listen, and who generally feel it their duty to laugh. It is, indeed, more than their duty ; it is their interest and pleasure. It is better to laugh at a bad joke than to cry over a good multiplication table. So long as the master is making jokes, he is not doing anything else, and there are so many disagreeable things he might be doing. It is well to counterfeit glee.

Thus do a schoolmaster's jokes become thin. Anything will do, the glee comes all the same. Why they should become coarse opens up other and more disagreeable aspects of the question. Just as the glee is always present, so is honest criticism always absent. When the master opens up his mind, and tells John what he thinks of him, John finds it convenient to reserve *his* opinion for open-air use. This style of pedagogic wit is obsolescent, if not obsolete. If any schoolmaster recognizes his face in the mirror we have here held up to ill-nature, let him take a thought and mend his jokes. The thin ones are better than these.

All this forms, doubtless, an explanation to Elia why schoolmasters' jokes do not tell out of school. But there is more than this in it. Answer, all ye who have suffered under the hoary joke repeated to the *n*th time by wealthy uncle or prospective father-in-law, has this thing never happened to you? Have you never, in desperate straits to entertain an unresponsive guest, or under sore pressure of rivalry at another man's table, fallen back upon one of those venerable jokes, and produced it with all the studied abandon of a body-snatcher, only to be bewildered and charmed to find

it go off brilliantly? Obviously, family jokes do tell out of their original circle.

The real explanation of the truth Lamb has hit upon is very simple. Schoolmasters' jokes do not tell out of school because they are school jokes. Jokes only tell where they meet with suitable apperception masses. *Punch* has a picture of two young gentlemen, and the young lady for whose affections they are rivals. "Do you like Botticelli?" she asks A, who innocently replies, "N-no, I think I prefer Chianti." Thereupon, rival B whispers with malicious triumph into A's ear: "Now you've done it. Botticelli isn't a wine, you idiot, *it's a cheese*." One can picture stratum after stratum of human society where this joke would not tell, though all critics of jokes (who are not too advanced to laugh at anything in *Punch*) will admit that it is neither coarse nor thin. With equal justice Elia might have said here, "Artists' jokes do not *tell* out of the studio."

This is a gentle chapter and makes for peace. Accordingly, there is no attempt made to define a joke. It is surely vague enough to avoid controversy to say that all jokes imply a taking of the whole for the part or the part for the whole, the joker knowing all the while the true relation of whole to part. To give point to the description (the very word *definition* is rejected as strife-producing), we might almost write the words *Ax. 9* after each joke, as we used to do in our problems in Euclid, where Axiom 9 reads "the whole is greater than its part." For on this law, and its breaches, hang all the jokes in school and out.

The whole to which all the parts of our experience must be referred for their true explanation is the self-consciousness of the individual. The permanent content of John's soul, we have seen, is made up of a great series of ideas which are grouped into masses which intersect and cross and oppose each other in a somewhat bewildering way. But those masses do not react upon each other in any haphazard fashion. As ideas form alliances among themselves resulting in larger or smaller apperception masses, so do those masses combine to form systems. It follows that in a well-organized soul all the ideas fall into definite relations of subordination and superiority, so as to form a regular hierarchy of ideas, masses, and systems.

A man's ideas naturally fall into systems, each gathering around some common centre, in relation to which each idea falls into its appropriate place. Such centres are a man's home, his club, his church, his business, his political party. Each such system is to a certain extent an independent organism, in which all the component parts fall into natural and reasonable relations with each other. At any moment in our conscious life we must regard all our ideas as forming a rational system; but certain systems become in a sense permanent in certain connections, from the frequency with which they occur, and from the vividness resulting from certain external stimuli. The moment a man enters his office, all his surroundings react upon his ideas in the same way as they have done for the past score of years, with the result that all his ideas fall into a definite relation to each other, so as to make up what we may

call his office system. At home quite a new set of ideas are called into prominence, and in church still another, the permanent relation of the ideas to each other being determined, as before, by the reaction of the external environment. Certain ideas belong to only one system, and can therefore cause no confusion. The idea of a *chasuble* has no standing outside of the church system, nor the idea of *Cydippe* outside of the biological system. On the other hand, the great majority of ideas belong to several of the systems; indeed, if this were not so, our identity would be lost among our many systems. I know that the *I* of my church system is the same as the *I* of my home system, because I find a certain number of ideas common to both.

Certain systems may have remarkably little in common. The system that centres round an entomologist's work-table has almost nothing in common with the system gathered round his political creed. Sometimes there is so little in common between two systems that we give ourselves up to banal reflections, and ask, "Can I, sunburnt and tweed-knickerbockered, lying on my back on the grass, be the same I that, pale-faced and cap-and-gowned, lately went with more or less regularity to eight-o'clock lecture?" Yet there must be enough in common to make up the ultimate system which goes to form the inseparable environment of the ego. In the last resort the ego must be present in all systems, just as the president of a society is *ex officio* a member of all committees.

But the ego is not an isolated idea; it is the meeting-

point of all the apperception masses. In a certain sense it may be said to have no mass of its own, since it is the common property of all the masses. But the mere fact of this presence in all the masses and systems gives it a character *sui generis*; besides, the ego is so closely connected with certain of the more permanent ideas in the various systems, that it can hardly free itself from them, but drags them into all systems. There thus comes to be practically an *ego mass*,¹ which is common to all systems, and which, according to its influence, determines what is known as the character of the soul in question.

In a certain sense, John is as many boys as he has systems. Or, if you prefer it, he has as many systems as he is boys.² The most superficial observer knows that John is a different boy in school and in the playground, at home and at church. Yet he is a fairly consistent boy in each system. The human soul is so constituted that it cannot take in ideas huddled together in any way. Its healthy existence depends upon its arranging them into a reasonable whole, in which they maintain fixed relations to each other. Since the ideas presented in school usually maintain a fairly well-established order among themselves, while such of those ideas as are common to school and playground naturally hold a different rank in each case, it

¹ Cf. Maudsley, *Body and Will*, p. 80: "The ego is not a constant, but a variable." And Paulhan, *L'Activité Mentale*, p. 211: "Le moi est une co-ordination."

² "L'homme se compose, pour ainsi dire, de plusieurs moi, qui ont un fonds commun et se confondent jusqu'à un certain point, mais non pas complètement." — PAULHAN, *L'Activité Mentale*, p. 200.

is to be expected that the soul should have a certain school place for a given idea, and quite a different place for it in the playground system. In school, for example, apperception masses are formed dealing with grammatical points that never enter into the system that holds in the playground. In the ordinary elementary school the school system is very sharply marked off from the home system, each having actually a language of its own. John at school is clean and tidy, speaks respectfully to his teachers and quietly to his neighbours, and at least endeavours to keep the peace among his nouns and verbs. At home he talks loudly and roughly, and lets his parts of speech fight it out among themselves. A discord that would put him to the blush in his class is not so much as noticed in the privacy of the home circle. Indeed, the accuracy of the school is as much a solecism at home as the familiar speech of the fireside is at school. If the master would hold up his hands at the expression "it's me," the father would be no less disgusted with the priggish school form "it is I."

The difference between the school system and the playground system cannot be better illustrated than by the not unfrequent occasions on which John is invited to show up the contents of his pockets. With flushed face and downcast eyes he produces object after object of which in the playground he is justly proud, but which, under the cold glare of the master's eye, seem to develop qualities for which even John feels called upon to blush. The horsehair that in the playground is warranted to split the stoutest cane the master's

money can buy, under that master's frown becomes a contemptible trifle to be explained and apologized for.

No sooner is the playground reached, after this deplorable interview, than all is changed; a new system becomes dominant. Persons as well as things take new rank. The dux boy in school often plays a very subordinate part outside. The master himself falls to a pitiable level in the new system, being only *proxime accessit* to the gamekeeper, a bad second to the drummer in the volunteer band, and not to be mentioned in the same breath with the lion-tamer at the penny show.

At home John enters still another world, where things have to be all rearranged. The John of the home may be fairly regarded as the standard John. He is more natural there; much of the pretence that he puts on for outside use is here dropped as unnecessary and unworkable. To be sure, there are certain airs (increasing directly as the number of his sisters, and inversely as the number of his brothers) special to home, by which John seeks to make up for the loss of the grander make-believe of the outside world; but these are insignificant by comparison.

At church, at Sunday-school, in the country during vacation, John enters a new world, where new ideas find a place, and old ideas find a new place and a new meaning. For each world has a tone of its own, and the same idea varies with the world in which it finds itself. In school the idea of *pigeon* has to hobnob with disagreeable ideas of object lessons and the number of vertebræ in birds. In Sunday-school it takes up

with Noah's Ark ; at home it may deal with the delights of the backyard dove-cote or the charms of a certain class of pie ; in the country it may form the centre of a system of snares.

In actual life the common man — our friend in the street — keeps all his systems separate. It is not to point a moral, but to illustrate our position by a generally admitted case, that we refer to the very common practice among men of keeping their religious and their secular systems apart. "Six days shalt thou labour and do all thy work, *but* —" quotes the adult John, and feels that he has by this antithesis justified his separation of the two worlds. If driven into a corner, he settles the matter with his ultimatum : *Business is business*, which is manifestly only an explicit statement that the system of business ideas must stand apart from all other systems. The flinty banker of the city is the indulgent father of the suburban villa. Shylock had his Jessica system as well as his Antonio one.

To some extent this is as it should be for practical purposes. A man's power of effective work would be greatly diminished were he to mix his systems. In one sense it is right to remember that business is business. It is as unwise to mingle the religious system, *as such*, with the business system, as to mingle the business system with the pleasure system. Each system must be kept apart, but they must be all correlated in the higher unity of the ego that makes them. We must have the same ego in different systems, not a different ego in each system. When we have the systems entirely

separate, the ego is the servant, the system the master; the system makes the ego. In a true organism this is reversed. The ego remains unchanged, is true to itself in all the different systems, and thus preserves an essential harmony between apparently conflicting systems. During business hours the ego attends strictly to business; but if a question of morality arises, the ego does not take its decision from the system in which it finds itself for the moment. Being itself a part of the system, it can to a certain extent modify that system. The ego brings its own morality.

Our main concern at present is not morality. What is true of the moral element is true of all the elements which enter largely into systems of ideas, and which must therefore share in regulating those systems. The really well-organized soul is not content with having systems; it must also understand them. Each system, while itself an organism including and explaining smaller organisms, must itself be included under and explained by a still wider system. This ultimate system for each individual consists of ideas inseparable from the ego itself, and which must therefore form part of all the subordinate systems.

While few have this unifying system in anything like good working order, most people have sufficient command over their systems to know at once when an idea gets into the wrong system. Every such misplaced idea produces a peculiar reaction on the mind, a sort of shock which is not unpleasant, and is the psychological basis of a joke. An idea in its own mass and system produces no shock, calls for no remark,

rouses no desire to laugh. A lamb in a field is an innocent and pretty object at which we look with pleasure, and pass on ; it is exactly what we expect to find there. Yet we have the most unimpeachable authority for believing that under certain circumstances the lamb becomes very funny. In one of our school classics we are told that

“It made the children laugh and play,
To see a lamb at school.”

The laugh does not depend upon the lamb ; any idea not legitimately connected with school work will produce as much fun as Mary's pet. An organ-grinder in the school-room, or even a postman, will do as well. A policeman at the master's desk would be intensely funny, were it not for the tragic consequences that usually attend the transference of the idea of a policeman from the street system to the school system. For here we have stumbled upon the Aristotelian limitation in the definition of the ridiculous, “What is out of time and place, *without danger*.”

For “without danger” it may be well to read “without an excessive shock.” The sudden appearance in my study of my aunt, whom I suppose to be in India, is not exactly dangerous, and yet, out of time and place as she undoubtedly is, I feel no desire to laugh. An idea may be thrust out of the playground system into the church system without producing any comical impression. The shock is too great. A vulgar idea brought into contact with some of the holiest ideas of our church system is indeed incongruous, but the shock

is unpleasant, rousing indignation rather than laughter. With this limitation, then, that incongruities must not produce too great a shock, or threaten serious consequences, it is true that the appearance of an idea in a system to which it is alien results in a joke.

This is clearly seen in the more rudimentary form of jokes popular with young children and barbarous adults. All forms of the practical joke consist in transporting bodily an object from one system of things to another in which its appearance leads to unusual consequences. Closely allied to this is the humour of simple exaggeration, the humour of the hideous caricature kind that is so fascinating to children at a certain stage. The primordial form of verbal wit, the pitiful quibble known as a pun, is a very obvious case of dragging an idea out of its natural system and forcing it into an alien one.

There is one class of school joke that *does* tell out of school. It has enlivened the pages of many a Blue Book, and has shed an occasional glimmer of humour over the prevailing gloom of St. Stephens itself. But "howlers," as this class are technically termed, are claimed to be not schoolmasters' jokes, but children's. Now no child who makes a howler means a joke. If he does, it ceases to be a howler, and becomes a piece of impertinence. The child makes the remark; the teacher or the inspector makes the joke. In that moth-eaten favourite of the scrap columns of educational magazines, the tale of the child who began to distinguish between a *widow* and a *window* with the words: "You can see through a window, but—," we find the child interrupted in the middle of a commonplace'ex-

planation. The joke is the teacher's own. The pupil who explained the phrase "funeral note" as found in *The Burial of Sir John Moore*, as "the letter inviting somebody to the funeral," was stating what he believed to be a commonplace though no doubt a solemn fact, and must have been greatly shocked at the unexpected laughter of the inspector, who indeed, by all the rules of the game of etiquette, was the last man who should have laughed, seeing that the joke was his own. The child sees nothing to laugh at in his plain statement; if he does, he does not make it, for one does not jest with one's inspector.

Here we seem to have strayed very far from the theory, not to say the practice, of education. Nothing seems farther removed from the work of an ordinary school than joke-making and joke-understanding. Yet when one comes to think of it, is not one of the main requirements in Standard V.¹ the understanding of jokes? In that fatal Standard the pupils must be able to reproduce in their own words a story which has been twice read to them. The inspectors are further required to select a story with a definite point in it. In actual practice this point comes to be a joke. The result is that a large part of the time of children in this Standard is taken up in learning how to catch rapidly the point of a joke.

The training is capital, and would be much better if it were not hampered, as it is, by a mass of grammatical minutiae of trifling importance. The exercise consists really in apperceiving a given presented content by

¹ See *Scotch and English Codes*.

means of the appropriate apperception masses. The apperception mass called into play must include the whole, of which the matter presented shows only the part or parts.

The story is told, for example, of some young men who wished to *score* off a supposed-to-be-stupid old grocer and provision dealer. They ask him, the price of a yard of pork, and on the prompt reply "fifteen shillings," invite him to supply a yard. Insisting upon having money down before the transaction begins, he does a capital stroke of business by selling three pig's feet as a yard of pig. In apperceiving this tale, it is obvious that the apperceiver must find the word *feet* belonging to two quite different masses. Both of those masses must be called into play before the point can be caught. In this case the teacher has perfect confidence that there is a mass corresponding to the *feet* that make up yards, and another to the *feet* that make up pigs. Every Standard V. child has seen a pig or its picture, and every Standard V. child is certified by the Education Department to have an apperception mass in which lineal feet are quite at home. The teacher is therefore certain that those two masses will compete for the dome, and that in the conflict the disparity of the two kinds of feet will be noted with the pleasant shock of surprise which characterizes this sudden recognition of contradiction where harmony is loudly proclaimed.

The incongruity here, indeed, appears to be double. There are the lineal feet in the pig mass, and the pig feet in the lineal mass. Both incongruities no doubt

exert an influence, but the prominent incongruity arises in the pig system, which, from its concrete setting, naturally holds the more important place in the childish mind.

In the "funeral note" case, only one apperception mass can be calculated upon at the start, and this marks off the "howler" from the genuine joke. The child who sees a joke must have the two masses at his command. It is true that he can be taught to understand his own joke, if we supply the lacking mass. The word *funeral* is dropped for a moment, and the attention concentrated on "note." This idea is seen to fit into two different masses,—the *letter mass* and the *musical mass*. Next, the word *funeral* is added, and it is seen that this makes no difference; for the idea of *funeral* can be made comfortable in both masses. To begin with, the funeral idea is only connected with the paper note in the boy's mind. By calling up all the circumstances of the battle-field, it is made plain that letter-writing is not largely carried on in the midst of battle, while there is a kind of note that is often heard immediately before, and sometimes during a battle. So soon as John compares the two masses, he has no difficulty in deciding in which the idea of *note* as music is more at home. He decides from knowledge. When he does perceive the foolishness of his first answer, he sees the joke enough to smile, hardly to laugh. His lack of enthusiasm must not be set down to imperfect knowledge now, nor even to wounded self-respect. It is simply that the process of explanation has taken away that shock of surprise which is essential to the true joke. Those who have

heard a Professor of Humanity lecture for half an hour on what is believed to be a Ciceronian pun, will understand John's mirthless acquiescence in the musical solution.

Some jokes, however, do not admit of treatment in this way; the necessary second mass may be an impossibility at the stage at which the experiment is made. *Punch's* weary little arithmetician who wished she was a rabbit because she had heard her father say that they "multiplied so quickly," would require to wait for a year or two before she could laugh at her own joke. The *widow-window* joke is another case in point. There are many stages in the understanding of this joke. "He said *widow* for *window*," the youngsters will say with a laugh; for the mere confusion of the two sounds is amusing to young children. By and by the metaphorical meaning of "seeing through" a person may become clear enough to give a new point to the contrast. The full force of the joke can never be appreciated by a boy. There is no apperception mass of *widow* in his soul at all equal to the demands of the joke, nor can there be, till long after he has ceased to be a boy.

The power to understand a joke thus comes to be a criterion of intellectual progress. At the earliest stages, children both accept and make the most contradictory statements without at all seeing the humorous aspect of the propositions they place side by side. Whilst the apperception masses are still unorganized, each fact stands in its own system, where, being quite consistent with its surroundings, it arouses no comment. It is only when its position in another system is compared

with its position in this that trouble can arise. The free and easy ways of royal personages in fairy tales seem perfectly satisfactory to children who have only one system in which to observe those exalted beings. No fault can be found with this nursery lopsidedness. It is inevitable. It is different at a later stage, where errors are allowed to remain through not comparing two systems actually within the permanent content of the soul.* An exasperatingly familiar illustration of this is to be found in rule of thumb applications of arithmetic. John gets his problem "stated" as best he can, and loyally multiplies the second and third terms and divides by the first. But while the teacher is anxious to know how many yards it would require to make sixteen suits, John is perfectly content to reply $\text{£}3272 : 10 : 6\frac{183}{197}$. A few words are usually all that are necessary to turn this answer into something for John to laugh at. But apart from such external aid, he sees only the serious side of the matter. His figures seem all consistent with each other, and there is nothing intrinsically funny in a large sum of money like that. To John $\text{£}3272 : 10 : 6\frac{183}{197}$ seems eminently in its place and time on his slate and during school hours. Besides, under a vigilant teacher, there is always an element of danger in having a wrong answer.

The moment John can laugh at his answer, he understands at least what is wanted. That this power of appreciating jokes is a sort of gauge of intellectual readiness and general intelligence has never been mathematically demonstrated. Yet it has not remained quite a pious opinion. More or less consciously, inspectors

of schools employ this test in estimating that vague quantity known in their reports as "intelligence." Children who listen to a funny remark with the same respectful attention that they give to the dictation lesson on examination day, can hardly claim a high degree of intelligence.

The same principle may be, and is, applied to gauge the intelligence of an adult audience, and if due allowance be made for the kind of joke, as well as for the rapidity with which it is apperceived, the principle is scientifically valid. For you have only to go low enough to find a joke that will fit the meanest intelligence. A highly organized mind often sees no joke in what seems intensely funny to a mind of less scope. Witness the unexpected laughter of children at incidents in which we see nothing but the veriest commonplace. The explanation is not far to seek. The narrower mind has apperceived a certain idea only in one system. Its appearance in another rouses the usual amusement that accompanies such an innovation. The wider mind, which has been accustomed to find the idea in both systems, receives no shock in finding it in either. The office boy who has never seen his master save in the regulation frock coat and silk hat, meets him by chance in the country, dressed in knickerbockers and a peaked cap and finds something desperately funny in what he sees. His master's family, accustomed to both styles, find no joke in the matter.

Jokes must not be judged by their power to raise a laugh. There are jokes that insist upon our laughing; others are content with a chuckle; some are satisfied

with a mere gleam of intelligence. This last class includes those cases in which an idea does not belong to a system in which it is found, but which might belong to that system. There is nothing incongruous between the idea and its new environment, except the fact that this is its first appearance there.

The editor of a comic journal would draw the line at this last class, and would deny their right to be called jokes at all. Yet from the teacher's point of view they rank exactly on the same level as the more laughable sort. They owe their point to the same mechanism, and are indeed of more common application in school than the others. Getting a child to *see the point* is precisely the same process, whether we wish him to laugh when he sees it, or merely to feel a thrill of intellectual pleasure. If it were worth the trouble, an unbroken line of ascent, or descent, could be made out from the broadest jokes, through the euphuistic conceits, to the finest poetical figures. All our most delicate poetical fancies are psychologically only refined forms of joking. When Burns compares our transient pleasures to poppies, to snowflakes, to the borealis, to the rainbow, he introduces the idea of pleasures into a mass in which it has not before appeared. It is not, however, out of time and place in those new masses; rather the main beauty of the figure lies in its being based upon the fitness of the old idea in a new setting. The reader's mind receives a shock, a pleasant shock, at each new intrusion into a fresh mass; but the point of resemblance is kept so clearly before the mind that no difficulty is felt in justifying

the new environment, and a thrill of more or less intense satisfaction rewards the mind which has discovered this justification.

But this satisfaction may be earned in quite a different way. Instead of being supplied with the primary idea, and enjoying the satisfaction of following the poetic fancy into each new mass, the mind may have the masses given, and be set to discover the idea which will connect those masses. What used to be so popular in the old jest books under the name of *riddles* gives us an illustration. It seems a great fall from Burns to riddles, but from the teacher's point of view it is a stooping to conquer. Very frequently a teacher's questions are riddles in the most accurate sense of the word. No doubt it sounds grander to talk of "a rider to Euclid" than of the riddles that charmed our preparatory years, yet many of our grandest riders are merely rechristened riddles. In the riddle, you get the second part of the simile and have to discover the first part, or you get the metaphor and are required to discover the literal truth.

"Out of the eater came forth meat, and out of the strong came forth sweetness," ran the riddle that Samson put to the thirty young Philistines. No doubt they carefully examined each of the apperception masses at their disposal, to find actual cases of meat coming forth from eaters, and sweetness coming from strong persons or things. Naturally they failed at first, since Samson had taken the precaution to tell no one, not even his own parents, about the lion that the bees had turned into a hive.

In the equally famous riddle : —

“What goes on four feet, on two feet and three,
But the more feet it goes on the weaker it be?”

there is more hope for the guesser, as of course there ought to be in view of the higher stake. Taking a general look at the lines, we infer that an animal of some kind is meant; for the mystery not only has feet as a table or a stool may have, but it goes, and becomes weaker. To be sure, Œdipus would have been unwise to risk his life on such an assumption; for in riddles the metaphor is allowed an altogether dangerous license. Still, following the line of least resistance, he would probably turn to the apperception masses that dealt with animals. Here, being an experienced reader of riddles, he would at once select the less common class of animals suggested. There are more quadrupeds than bipeds, more bipeds than tripeds. His hopes would, without doubt, rise when he came to tripeds; for, in truth, the class does not exist. If the mystery be an animal at all, then, it is in the triped part of the problem that one must look for the metaphorical part that causes the trouble in all riddles. Now the kangaroo has a pretty trick, it appears, of sitting upon its tail and its two hind legs, when fighting. Some idea of this kind might have set Œdipus on entirely false lines; but, fortunately, he had not even heard of a kangaroo, and was limited in his metaphorical applications. From the swarm of ideas of animals that claimed admission into the dome of his consciousness, it would be strange if the most important animal of all were absent. So

soon as the problem came to be, which animal can be most readily represented metaphorically as three-legged, it would at once occur to him that it is more natural to add one leg to a man, than to cut off one from a quadruped. The additional leg is easily supplied in the form of the staff of old age. The reference to the weakness of quadruped infancy, as compared with sturdy biped manhood, would at once suggest itself, and Œdipus would give out his answer with little fear of a sudden termination of his days.

In the poetical figure, you are supplied with the proper system or mass; all you have to do is to apply properly the materials given, the development comes from within. In the riddle you get the development, and are required to discover the appropriate system or mass. In reading a good poem we are apt to remark how true the comparisons are. As a matter of fact, many of the most appropriate comparisons would be quite unintelligible, were the key not supplied in the title of the poem. Many people object to Browning's poetry, and say they do not understand it. What they really want is an intimation, at the head of each poem, of the system or mass under which the poem is to be apperceived. Frequently one fails to appreciate a poem because one does not understand the tone in which it is written. We need hardly go to Dickens'

"Upon the log
Lay the expiring frog,"

or to Mascarille's

"Au voleur, au voleur, au voleur, au voleur,"

for examples. We come across milder cases of the same thing every day.

The complaint is sometimes made that in poetry we do not want a problem ; we want beautiful thoughts in clear language. Now no one will accuse Wordsworth of being difficult or obscure, yet even in his poetry a verse taken by itself, and without the aid of the title, resolves itself into a riddle. Take the verse : —

“ A little Cyclops, with one eye
Staring to threaten and defy,
That thought comes next — and instantly
The freak is over,
The shape will vanish — and behold
A silver shield with boss of gold,
That spreads itself, some faery bold
In fight to cover.”

Experiment has shown me that to a class of intelligent students who did not happen to know the lines before, this passage was an insoluble riddle. A clever Senior class in school naturally gave the same result. Explaining all the difficult words had no effect. Yet the mere hint that the subject was a flower, at once led to sixty-seven per cent of the class writing down correctly the word *daisy*. Among those who were still wrong, eight per cent scored an outer with *sunflower*, which, but for the “silver,” fits the description as well as the daisy. The word *flower* gave the system. The rest follows naturally.

The great importance of this preliminary knowledge of the system to be called into play has been frequently demonstrated by practical experiment among the psy-

chophysicists, the previous knowledge of the system to be called into play being shown to materially diminish the time required for nervous reaction. Von Kries, indeed, has a theory of connective cerebral arrangements by which the brain is assumed to switch the stream of thought in this direction or that. His illustration is the clef in Music determining the meaning of all the notes that follow it. An equally good illustration might be the stop of an organ, which gives a new character to the whole harmony so long as it is in action. When we take up a French book, for example, out comes the French stop, and the whole mental apparatus adopts the French style of vocabulary and construction. So long as this stop is out, we shall never mistake *pour* for a verb, or *main* for an adjective. It was because the English stop was out, that a clever schoolboy thought Jugurtha was a horse, because he had read about Jugurtha's *manes*.

Nowhere does this connective cerebral arrangement for calling up appropriate systems receive a better practical illustration than in the questions set by teachers to their pupils. Each such question ought, as one of its essential qualities, to indicate the system to which it belongs. Yet there is no more common mistake in teaching than to ask a question out of a certain system in the teacher's mind, without in any way giving the pupil a clue as to which system it is. The teacher, for example, has out the dull stop of chronology, and asks: "When did Charles the First die?" Out of the highly coloured picture system that forms so large a part of the average child's soul, comes the unexpected reply:

"On a raw and frosty winter morning." From the system of historical incidents the teacher asks: "How did David the Second die?" With the grammatical stop full out, the child answers, innocent of guile, "Childless." With his mind full of the discussion on the purification of the Clyde, the teacher puts the problem: "Bruce in his old age lived at Roseneath. While living there he may have fished in the river Clyde. Why could he not fish there now?" Pulling out to its full extent the stop of common sense, the child replies: "Because he's dead."

This class of blunder must not be confounded with the ordinary howler. There is, indeed, no blunder at all. Teacher and pupil are both right, the misunderstanding lies in the different backgrounds supplied in the two cases. When such a mistake occurs, the wise teacher will take the blame to himself. Had he, by a few words of explanation or warning, made sure that he and John were working in the same system, the mistake could not have arisen. In the riddle method of teaching, the case is different. The quotation from Wordsworth may be used as a school exercise in two ways. Starting from what the children know about this little flower, the various comparisons in the text may be worked out to the profit and pleasure of the class. This is the usual way.

But the riddle method may be adopted, and, as many are inclined to think, with much better results. Certainly it demands more effort, more ingenuity; and is more in keeping with the doctrine of finality in teaching. It is not a following, but a feeling of one's way,

a seeking of an end, a finding of means. Obviously it is a case of Holmes' reasoning backwards. Certain facts are given. These must be apperceived, and arranged in such a way as to involve no contradiction. So soon as this has been accomplished, the riddle is solved. If the answer is not what the propounder expected, it proves, not that the answer is false, but that the riddle is bad. If Wordsworth's description could apply equally well to something other than the daisy, the poem would, to that extent, lose the charm of truth.

Whatever good can be derived from paraphrasing and translation is due to this system-seeking. Every paraphrase or translation worthy of the name is based upon a hypothesis as to the system of ideas involved. The word-by-word boy is hopeless. Examiners are never tired of complaining that candidates do not take a passage as a whole and seek to draw from it some connected and rational meaning. This amounts to nothing else than a complaint that candidates do not, in their own slang, "make more shots" at the meaning. What the examiner really wants is more scientific and intelligent guesswork. With a stiff piece of Latin prose to translate into English, the candidate goes through three processes. First he reads it over, picking out all the words or idioms that he knows. Each known word or phrase or reference is a centre round which ideas gather. The second step is to make some sort of hypothesis as to the general meaning of the whole passage—a description, a speech, an argument, or what-not. This hypothesis must be such as to fit

into all the known words, and must fix the tone of the whole. The third process consists in working backwards from this hypothesis, and constraining each unknown word and idiom to take a meaning in conformity with the hypothesis. In the case of preparation by means of a dictionary, this third stage takes the form of verification, just as Holmes' proceedings after a case is once started are merely a hunt for verifications. Naturally the greater the number of known words, the better the hypothesis, and the more certain the "shots" at the unknown words, till at last a point is reached at which the circle of induction is practically complete, and the initial hypothesis coincides with the final result of analysis and verification.

CHAPTER IX

GRAPHIC HYPOTHESES

THE Schoolmen made great case of the distinction between the primary qualities of an object, and the secondary qualities. We have seen in Chapter III. that man is generally admitted to be the measure of the secondary qualities, such as colour and taste, but not of the primary, which include such essential qualities as extension. With this agrees the prevailing impression among teachers of the extreme efficacy of drawings as a means of illustration. The secondary qualities may be modified by their passage through our senses, but it is supposed that such a primary quality as extension cannot be in any way modified by the senses of the observer.

In Chapter VI. we have seen cause to reject this view. Even a simple straight line may mean something slightly different to each new observer, and the greater the number of lines in a drawing, the greater the range within which its interpretation by different observers may vary.

There is, no doubt, a sense in which a drawing does aid in establishing a common understanding between two observers. We may be quite unable to understand a certain drawing, or we may make quite a different interpretation of it from that intended by the draughts-

man; but when two persons are talking about the drawing that lies before them, there is at least something to go upon, there is a sort of least common denominator of thought, to which all the ideas of each party must be reduced before agreement can be expected.

Many teachers make an occasional use of this method to test the accuracy with which their pupils are taking in the information that is being supplied, and very frequently peculiar misunderstandings are thus brought to light. For example, a class of training-college students was set to make a drawing of Robinson Crusoe's tent from the description given in the story. Two or three drew a Union Jack lying flat upon the roof of the tent, and when the accuracy of this particular was called in question, they justified themselves by referring to the text in which we find the statement that the roof was loaded "with *flags* and large leaves of trees, like a thatch."¹ It is obvious that there was here a double blunder, for on November 23, 1659, there were no Union Jacks of the pattern represented. Yet, apart from the drawing, neither blunder would have been suspected.

Mr. Henry J. Barker tells of an inspector of schools who used to ask candidates to illustrate their answers by sketches, but who "obtained from time to time such ludicrous embodiments from the lads, that he decided to abandon his new method, and to remain satisfied with verbal responses, without troubling himself whether they were actual expressions of knowledge or not." As an inspector, he was right to give up

¹ *Robinson Crusoe*, Chap. V.

his plan. Had he been a teacher, he ought to have persevered. A specimen case of his method gives just that knowledge of the contents of John's mind that every good teacher should seek.

"On one occasion, for instance, during the course of an examination in Geography, he requested a boy to delineate on the blackboard his conception of a 'volcano.' The pupil readily did so; and produced a rough chalk-drawing, the chief features of which appeared to be a truncated cone, a rainbow of lava and fire, and a sort of extinguisher.

"'Yes,' said the inspector, 'that is fairly good. But that object on the right, my boy, — what is it?'



FIG 8.

"'Oh,' answered the lad, looking fondly at the object indicated, 'that, sir, be the parish church of Pompeii!'"¹

This mingling of the concrete with the abstract, the general with the particular, is a fruitful source of misunderstanding. A diagram should be a diagram, and not a picture. So soon as the picture element is intro-

¹ *Our Boys and Girls at School* (Arrowsmith's Bristol Library), p. 82.

duced, it carries with it a sort of side interest that interferes with the main point to be illustrated. Mr. W. H. Mallock, for example, wishing to illustrate various facts in social economics, uses picture-diagrams, — houses, men, suits of clothes, loaves, and so forth, — which certainly attract too much attention to themselves as drawings, to their hurt as illustrations. In some cases, indeed, they convey an impression contrary to that intended. Thus we have two men,¹ one very fat, and one very lean, the first to represent the income accruing from the cultivation of soil of the best quality, the second to represent the other extreme. So far as I am personally concerned, the picture would emphatically lead me to prefer the worse soil, for the poor fat fellow seems in a very bad way indeed. The best soil seems dear at the price of such an unwieldy body, and such a fatuous expression. Yet it does not appear that this is quite the impression Mr. Mallock means to convey. A plain pair of columns of different heights would serve his purpose far better.

Diagrams ought to be as abstract as possible, unless the picture itself forms a part of the idea intended to be conveyed. A newspaper does well, for instance, in publishing a shooting competition score, to reproduce a picture of the target opposite each marksman's name, with the actual hits represented on it; since here the target is itself an integral part of the idea it illustrates.

Into such bad odour has the unfortunate word *abstract* fallen in its educational connections, that it requires some courage to fight its battle. Teachers

¹ *Classes and Masses*, p. 51. A. and C. Black, 1896.

are too apt to forget that the progress of education is from concrete to abstract. Like everything else, abstractness is only an evil when out of its proper place. It must be the goal, not the beginning. Since the *Orbis Pictus*, an unillustrated school-book is a thing to be apologized for. In books for very young children, we print T-O-P in the text, and add a picture of the toy in the margin, so that word and thing may become indissolubly connected. Whenever the word *top* occurs thereafter, we hope that the picture will immediately spring up in the child's mind. At a later stage this pictorial association, so far from being a help, becomes a positive hindrance. We want the child to use the word as a symbol; we do not wish each word to be hampered in its flight by the necessity of carrying about with it a picture which demands to be brought to light every time the word is used. We want our words to be "winged," and a picture is a sad limitation to this Homeric freedom.

There are other cases in which a picture hampers instead of aiding thought. Certain ideas are better left in words, inasmuch as they do not lend themselves to representation in terms of extension. Some of Blake's drawings belong to this class. The soul is not suited for pictorial representation. It is true that Fisher Unwin has published a set of four beautifully executed plates, with accompanying letterpress, which represent diagrammatically the qualities of various kinds of souls. It is impossible to say whether the book is a costly satire upon Mr. Galton, or the honest endeavour of some well-to-do amateur psychologist to set forth his

peculiar fancies. For us the important thing is that, except as representing the individual impression of the author's mind with regard to souls, the drawings are absolutely worthless.

In a little book published by the London Sunday-school Union, entitled *The Blackboard in the Sunday-school*, there are many illustrations that from their very nature must be regarded as failures. The following, for instance,¹ is a remarkable way of demonstrating the process of conversion. The blackboard is divided by a horizontal line into two parts. Above the line, on the left, is a graphic representation of the sun; this, we are told, stands for the Sun of Righteousness. On the lower side of the board is an inverted man who appears to be walking upside down along the line and away from the sun. This represents the sinner going "into deeper darkness and further from God." The pose is justified by the apt quotation, "The way of the wicked he turneth upside down" (Ps. cxlvi.). The teacher asks, "How shall he be saved?" Prov. xxviii. 18 gives the clue to the answer: "Whoso walketh *uprightly* shall be saved." The transaction is concluded by an application of Jer. xxxi. 18: "Turn thou me, and I shall be turned." The second picture shows the sinner duly inverted, walking cheerily along the line towards the sun.

Is any comment needed? Is the process of conversion made any clearer, not to say more sacred, by seeing a chalk man turn a somersault? There are certain things that are better left undrawn.

¹ Page 63.

Do the illustrations to works of imagination really help the reader to a better comprehension of the meaning of the author? It depends entirely upon the class of literature. Gustave Doré, for example, has adopted a class of subjects for illustration that had much better have been left alone. Many of his pictures are such as to ruin the text he seeks to illustrate, in the eyes of all who have any sense of humour. Milton has been often praised for his reticence in not fully describing Satan. Can we say as much for the illustrators of *The Pilgrim's Progress*? Besides, it is the rarest thing in literature to find a work that is really illustrated. The illustrator is merely a man who comes between the author and the reader, and imposes his meaning on the words of the book. In the *Life of Dickens*¹ by Forster, you will find a double sheet of Dombey's to illustrate the tale of *Dombey and Son*. The whole twenty-nine faces seem to the ordinary reader typical of the sort of man Dombey is represented to be; but none of them pleased Dickens, who hankered after a certain gentleman in the city, whom he was anxious for the artist to see, as being "the very Dombey." The only case in which a work of this class can be truly said to be illustrated is when the author and artist are one, as in *Trilby*.

In addition to this almost insuperable difficulty in representing the exact picture in the author's mind, there is the more common danger of purely illiterate misconception of the plain meaning. What could be clearer than

¹ Vol. II., p. 317, shows seventeen Dombey's — the remaining twelve appear on p. 318.

"Some village Hampden, that, with dauntless breast,
The little tyrant of his fields withstood"?

Yet in an illustrated edition¹ I find that the word *little* has misled the artist into representing the village Hampden as a boy who defends a little girl and a lamb from the attacks of two bigger ruffianly boys.

Still, when information of a primary kind is to be given, there can be no doubt but that drawings are of the utmost service in the way of expressing the author's meaning. In *Robinson Crusoe* there are several points in which a few lines by way of a diagram would save a great deal of writing, and prevent much confusion, both to writer and reader. I am convinced that De Foe used a more or less elaborate chart in the preparation of his story, but he occasionally used it carelessly. It is little to the credit of the various editors of this wonderful romance that so many errors should have remained unnoticed. The explanation is probably to be found in the fact that no map (so far as I have been able to discover) has been published of the Island of Despair. Had it been otherwise, it could not have failed to be noticed that in Chapter X. he uses the phrase "against the shore at the *east*," where the whole context, viewed in connection with a map, demands *west*. This whole passage is so confusing, when not illustrated by a map, that some editors have calmly omitted it altogether. Again, at the end of Chapter XXII., we are told that the savages "always landed on the east parts of the island," though we know from the whole story that their usual landing-place was the southwest corner of the island, and we are explicitly

¹ Sampson Low, Son & Co., 1858.

told, at the beginning of Chapter XIV., that they never came to the "east part of the island."

Further, about the middle of Chapter XXV., we are told that the white men wished to drive the savages into "the farther part of the island southwest, that if any more came on shore they might not find one another." Here *southeast* is evidently what De Foe meant, and southeast is actually used in the third paragraph following.

As an illustration of a false impression conveyed by a verbal description, where a sketch map would have been absolutely unambiguous, take the following: Robinson, in giving an account of his survey of the island,¹ tells us that he walked "still due north, with a ridge of hills on the south and north side of me."

This apparently means that there was a ridge of hills extending from east to west, and lying to the north of Crusoe's path, and a similar parallel ridge to the south. But the context lets us know that he was following the course of a stream, and it is highly improbable that the stream would cut its way through two hills that lay directly in its course. By and by the state of affairs becomes clear when we are told that he comes to a place where he finds "an opening where the country seemed to descend to the west." He speaks, too, of getting, at this point, a clear view to the west; all implying that up to that point he had had a north and south ridge running along the left of his course. After considering all this, it struck me that it would be an interesting

¹ Chap. VII.

thing to find out how far Crusoe's Island was clearly apprehended by the readers of De Foe's narrative, particularly as I thus saw my way to obtain a sort of tangible example of the method of reasoning by hypothesis referred to in last chapter. The editor of the *Boy's Own Paper* agreed to arrange for a competition, and offered five guineas in the way of prize-money. The following were the instructions issued to intending competitors:—

“What is wanted is a map of Robinson Crusoe's Island, such as he might have showed to his friends after he came home. It should indicate the size and position of the island, and the position of all the important places, such as the creek, the castle, the harbour, the grotto, the spot where the footprint was found, where the shipwreck took place, where the savages used to land. The general nature of the surface of the island should also be indicated,—the hills, valleys, rocks, and currents. It goes without saying that we do not really know the shape of the island,—though a well-known island has been named Robinson Crusoe's,—so each competitor must choose a shape for himself, the only limit being that the shape chosen must suit all the events of the story.

“As this is rather a new kind of competition, it may not be amiss to give some hints how to go about drawing the map. Get a copy of the story *Robinson Crusoe* and read it over with a pencil in yo · hand. As often as you come across any remark bearing upon the position of the island, note carefully what is said, and make at the same time a pencil mark at the margin.

In doing this you will be greatly helped by keeping clearly before your mind the questions you wish the book to answer. For example, you want to know whether the island was longer from east to west or from north to south; what the greatest length of it was; on which side Robinson was wrecked; 'which side was nearest the mainland. Some of those questions are not answered directly, but a little common sense, and the putting of two and two together, will answer them and many more. After you have read over the whole story, look up all the marked parts, and make up your mind as to the general bearing of all the facts; then put your map on paper in the way you usually draw your maps. You may draw your map on any size and kind of paper you please, and either colour it or not as you think best. The one thing of importance is to make your map agree with the story. Above all, don't be afraid to send in your map once you have begun it. It may not look well, and may even have some mistakes in it, and yet be a capital map for all that."

Over one hundred and fifty maps in all were submitted. They came from all parts of the world, and represented all ages from nine to thirty-two. Girls as well as boys competed, and there was every trace of all sorts of social differences among the competitors.

The first thing that strikes one in examining those maps is the unlikeness that exists among them. They are all carefully labelled *Robinson Crusoe's Island*, and yet no two of the one hundred and fifty are alike. In view of this deplorable difference of opinion, our thoughts may take one of two directions. On the one hand, we

may ask contemptuously, what does it matter? *Robinson Crusoe* was not written to provide material for a map-drawing competition. Very probably some of the worst maps are the work of boys who have the keenest interest in and appreciation of the story. With this criticism we must all have a good deal of sympathy. Every genuine lover of pure literature shudders when he sees a play of Shakespeare or a sonnet of Milton degraded to be material for examinations. The other day in London a literary man, while wondering how he and his fellows could hope to have their works bought and read in open competition with Shakespeare, Milton, and Scott, drew comfort from the fact that the examiner is on the side of the new men. So long as the great ones of our literature are prescribed in school and examined upon, so long will our new men have a chance.

There is more than after-dinner logic in this argument, and if *Robinson Crusoe* were pure literature, the what-does-it-matter criticism would certainly apply to those maps. But *Robinson Crusoe* is not pure literature. Its unique attraction for boys, and its extraordinary charm for all, have little to do with its literary merit or style. Its fascination lies in the situation, and the wonderfully accurate, detailed, and — to use a bit of the slang of the new reviewer — “convincing” working out. My readers are aware that De Foe is credited with over two hundred and fifty works. Is it to be supposed that he confined all the charm of his style to one book out of this enormous total? Yet how many of the others live? How many of us know even three

of them by name? How many have read even one other than *Robinson*? Then take *Robinson* itself. The second part is notoriously inferior to the first, and this surely will not be set down to style. As for the third part, its very existence comes with a shock of surprise upon the great majority of Crusoe's admirers.

Robinson Crusoe stands at one pole; a fairy tale at the other. Between those two poles extends a regular series of more or less practical stories. Take up a fairy tale, — let it be in Perrault's dainty pages, — and your interest is of a very different kind from that aroused by De Foe's story. Here you are interested in every delicate turn of expression, every shade of character, every whimsical incident. The play is everything; the setting is nothing. Time and space are annihilated. It was "once upon a time" that the prince was born; it was in "a certain city" that the princess lived. To ask for a tracing of the route followed by Hop-o'-my-thumb through the forest is no less ludicrous than to ask for a plan and elevation (with a transverse section) of Cinderella's slipper. But in the *Island of Despair* all this is changed. We find ourselves in the very heart of stubborn fact. The island has latitude and longitude, tides and currents, accurately marked-out distances. It has its history as carefully looked to as its position. Had you landed a little to the west of south, you would have found a "large post" on which were cut "in capital letters" the words "I came on shore here on the 30th of September 1659."

We are therefore not entitled to belittle plans, sketches, maps, as elucidating De Foe's meaning. As

a matter of fact, it has to be remembered that interest is of different kinds as well as of different degrees. The old butler, Gabriel Betteredge, in Wilkie Collins' novel, *The Moonstone*, found his main interest in the quasi-philosophical religious reflections that De Foe found it expedient to insert into his tale in order to conciliate the Puritans. Some boys revel in the fighting with the savages, others in the coasting voyages; but most readers are charmed by the ingenuity displayed in the adaptation of means to ends. Ethics, Metaphysics, Education, Theology herself, have shown their interest in the Island of Despair, by quoting *Robinson* as illustrating some of their principles. But boys are interested in a real island and a real man, and the points in which they are interested can be made plainer by the use of a map. While admitting that this point of view is at least as important as that of the purely literary critic, we must be careful not to carry our claims too far. There are things of consequence, and things absolutely indifferent to the reader. For example, neither the text of the story nor any illustration of it that I have chanced upon makes it clear whether the footprint on the sand was a right foot impression or a left. It is true that every picture of the footprint must represent one or other; but different artists are so inconsistent, even with themselves, that the truth remains to me a perfect mystery. But obviously this ignorance can be of no importance whatever. Nothing in the tale is affected by it. The place of the footprint on the map, however, is a very different matter. If we are to understand the impression the

sight produced upon poor Robinson, we must consider that it was found in a part of the island that he had up till that moment regarded as entirely free from intrusion by the savages. One finds considerable difference of opinion among the map-drawers on this point. The footprint wanders pretty much all over the island. But those who have not placed it between the bower and the boat have obviously misplaced it. One or two, with an excess of exactness, have fallen into another blunder. They have carefully indicated the high and the low water mark, and have placed the footprint exactly between them. As a matter of fact, the footprint must have been made somewhere above high-water mark; for the impression remained several days after Robinson had first observed it, which would not have been the case had it been subjected to the influence of the waves.¹

The maps, indeed, furnish an excellent example of that thinking in block which is much more characteristic of immature intelligence than teachers in particular are apt to believe. My own experience is borne out by that of others who have had greater opportunities of observing the peculiar phenomenon that I wish to speak of. Boys of the half-time stamp who are forced to learn reading, in at least a mechanical way, before they are set free for the more congenial work of the factory, very readily forget the art they have acquired. But the power of reading does not altogether die. Boys of this class who afterwards

¹ A curious misconception is betrayed in several cases by naming the mark on the map *Friday's footprint*.

find it of interest to discover which side has won this or that cup, can usually make out the general sense of a passage which they could not read in detail, though their lives depended on the success of their attempt. What is clearly demonstrable among those wholly unlettered young men, prevails to some extent among people of a much higher intellectual range. Our first perusal of a stiff philosophical treatise leaves us with a general impression of what the author is driving at, but it takes many readings before we can follow his meaning in detail. So in learning a new language we sometimes read a story, as we say, for the sake of the story. In such a case we miss point after point in the narrative from not knowing this word or that, yet we carry away a general idea of the plot and the leading incidents of the story. This is what happens to those who read *Robinson Crusoe* without the aid of a map.

To those who still maintain that they would rather read the book comfortably in this incomplete way than understand it more fully and become prigs in the process, it may be comforting to know that recent writers on Animal Psychology are convinced that the essential difference between the thoughts of a man and a brute is that the brute thinks in pictures, while the man analyzes the pictures into their elements.¹

This creation of an island that never existed is particularly useful in illustrating the creation of our ideas in general of the outer world. Millions of people have an idea of Broadway, yet no two of those ideas are

¹ Cf. Lloyd Morgan, *Comparative Psychology*, Chaps. XIV. and XVI.

exactly alike. Still they are all like Broadway, and if one could photograph the impression in any mind, all the other minds would recognize the picture as that of Broadway. The fact is that while our mental impressions of a given object are continually changing, they always *correspond* with each other, and to the given reality. Now all the best of those maps correspond to each other in certain respects; why, then, do they differ so widely from each other? The answer is that the fixed points, the points of correspondence, are fewer in this case than when a real object is dealt with. From the text we fix the relative positions of certain points in the coast-line of the island, but the coast-line itself may be filled in with perfect independence so long as certain conditions are attended to. Even in filling up the outline of the map of the United States, a schoolboy allows himself a large amount of freedom in the greater or smaller number of undulations he supplies. But in this case he may throw out a whole peninsula or carve out a whole gulf as the fancy takes him, and yet no one can object. All the critic is entitled to ask is: "Does this map contradict any of the statements made in the text?" A hundred maps characteristically different from each other may yet give a completely satisfactory answer to this question.

With such a variety of interpretations, can it be maintained that De Foe has succeeded in expressing his idea of the island? Leaving out of account the large number of maps that differ from the truth as found in the text merely on account of the inability of

the competitors to understand it, and considering only those maps which fulfil all De Foe's conditions so far as this has been attempted, we still find one idea of the island in De Foe's mind, and another in that of the author of each of those fairly successful maps. This raises the further question: Is it possible to write a story like this without a clear concrete background? In other words, had De Foe a clear and so far complete picture before his mind as he wrote? The answer must be that he had. No doubt a story of this kind may be written as a series of character sketches on a nebulous background. The thing is done every day. Probably a good half of the six novels that every week-day now brings forth in England, owe their early death to their failure to express what has never been brought to clear consciousness in the minds of the writers.

This question must not be obscured by any confusion between a clear and an accurate mental picture. We have already seen that De Foe makes several blunders, which the careful use of a chart would have rendered impossible. We have further proof that his conception of the island was very imperfect in its details. In that dreary *third part* which labours under the depressing name of "The Serious Reflections, during the Life and surprising adventures of Robinson Crusoe: with his Vision of the Angelick World," and which was "Printed for W. Taylor at the Ship and Black Swan in Paternoster Row, 1720," De Foe seems to feel the want of a graphic representation of the island. In this work, accordingly, we find a remarkable combination of a picture and a map. We, of course, do not know

how far De Foe is personally responsible for the execution of this map ; but it was no doubt produced under his direction, and with the benefit of his criticism. It consists of a sort of bird's-eye view of the island, indicating the various natural features, and the surrounding sea. There are houses and huts scatter'd about the place, rivalling, and in many cases even exceeding, the hills in magnitude. Wherever there is a space free from hills, huts, and trees, the artist has thrown in a group of dancing or fighting savages. In the foreground Crusoe and some companions tower majestically as high as a corrupt perspective will permit, above the masts of a vessel at anchor in the offing. A touch of pathos is cunningly introduced by a representation, in the centre of the island, of the bower, in the midst of which is seen a clumsy bird of about the size of a tree with a pitiful legend coming out of its mouth : "Poor Robin Cruso."

Such a picture, inaccurate if you please, but concrete and clear, must have figured itself in De Foe's mind. His description may only bring out parts of it—a not uncommon phenomenon in reproducing mental imagery.¹ It is none the less complete. Had Mr. Galton given the details of the occupations of the "100 adult men, of whom 19 are fellows of the Royal Society, mostly of high repute, and at least twice, and I think I may say three times, as many more persons of distinction in various kinds of intellectual work,"² it is almost certain that the novelists would be found to

¹ Francis Galton, *Human Faculty and its Development*, pp. 94, 95.

² *Ibid.*, p. 88.

hold a commanding position among those whose power of mental imagery is very high. De Foe would emphatically have held a place not very far from the top. George Meredith, and writers of his class, may make up their conversations between mere minds without any mental imagery at all ; De Foe always wrote his tales as if he were sitting in the pit of a theatre, and describing what he saw passing on the stage.

We have seen that it is fashionable just now in Psychology to speak of mental states as forming a *continuum* in which all our ideas find a rational place, according to their relations to each other and to the whole. Professor Ward¹ contrasts the place an impression holds in this continuum with that held by a mere idea. His illustration is peculiarly apt. The impression remains permanently fixed for our examination ; if we examine one part now, and then return to it, we find that it has not changed materially in the interval. Each part exists independently of its relation to the whole. A mental image, on the other hand, he compares to one of those designs worked out in gas that we see at some of our illuminations. As the wind sweeps over them, now one part and now another disappears altogether, and the darker the one part becomes, the brighter the others. Such an image of the island we may suppose to have hovered before the eyes of De Foe. As he wrote of the castle, a bright picture of that stronghold arose in his mind, and enabled him to write of it as if he were actually looking at it. By and by it was the turn of the bower, or the little harbour for his boat.

¹ Art. "Psychology," *Enc. Brit.*

But while each had its turn of greater prominence, the whole notion of the island remained a continuum. Each part was always to some extent correlated to the rest. The cause of whatever errors may appear in the description is to be found in the comparative feebleness of this supervising and correlating general conception of the island. What was the source of De Foe's charm was also the source of the danger he undoubtedly ran of sacrificing the whole to the part.

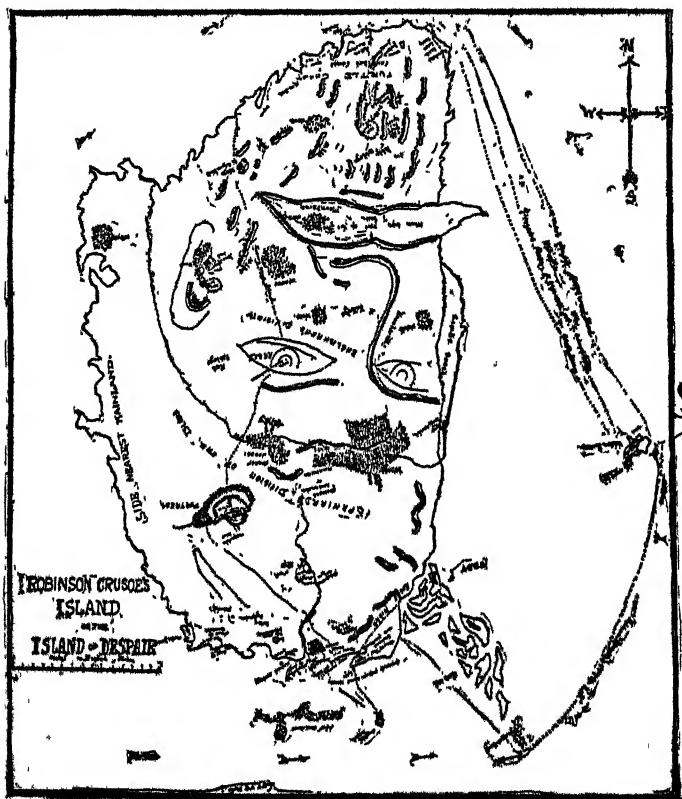
Assuming that De Foe has a very vivid picture in his mind of each of the scenes he describes, how far has he been successful in expressing this picture in words? If we are to judge by the interpretation supplied by the various artists who have illustrated the book, his success must be regarded as very moderate. Crusoe omits to state what sort of dog it was that he somewhat unkindly included among his list of "things of less value." The result is that artists revel in dogs of all species. But, for one inaccuracy for which De Foe is responsible, there are a score to be charged entirely to the artist. In an edition published in 1853, for example, we have the description of Crusoe's making *spatterdashes* to himself *illustrated* by a picture of Robinson in his bare feet. In an edition by T. Cadell and W. Davies (Strand, 1820), which proudly proclaims itself to be "embellished by engravings by Thomas Stothard, Esq., R.A.," we find Crusoe's rough-and-ready tent represented as a regular marquee that might have kept company with lawn-tennis. Generally speaking, Crusoe is drawn as a very refined man who has come down in the world, rather than the rough-

young fellow he is in the story represented to be. Even George Cruikshank cannot be trusted to reproduce exactly what his author describes. On page 78 of the original edition we find the following passage, referring to Crusoe's excavations in his cave: "I worked sideways to the Right Hand into the Rock, then turning to the right, again worked quite out, and made me a Door to come out on the Outside of my pale or fortification." Cruikshank's illustration of this represents the door in question on the *left* hand of the pale or fortification. For this, manifestly, and for Mrs. Grundy's influence on the attire of the man Friday, De Foe cannot be held responsible.

The fact of the matter is that the process of communicating an idea from one mind to another is not a single process, but a double one. The idea must be dissolved, as it were, in words, and then again crystallized out in the new mind.¹ To put it otherwise, the concrete of one mind must be reduced to its abstract terms, and then rebuilt into the concrete of the new mind. The differences in the interpretation of De Foe's words are due to the greater or less degree of abstractness to which these words have attained in the minds of different readers. If the words have reached a high degree of abstraction, there is every chance that

¹ The process, in fact, is a simple example of the way in which Paulhan conceives man to react on his environment. "A mon point de vue, l'homme est un appareil de systématisation qui reçoit les impressions du monde extérieur, les décompose, fait avec les éléments de nouvelles synthèses et finalement réagit de manière à augmenter la finalité en lui-même, dans la société, et même dans le monde extérieur." — *L'Activité Mentale*, p. 88.

they will reproduce the ideas in the mind of the author with the minimum of distortion of the author's funda-



MAP 1.

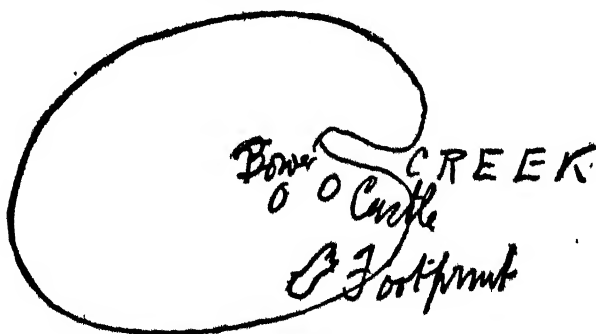
mental meaning. If each word is burdened with a series of associations, there is a strong probability that the resulting idea will be unduly coloured by

individuality of the reader's mind. This brings us to the hypotheses on which those maps have been constructed. To begin with, it is evident that many of them were begun on a preconceived hypothesis which owed nothing to a careful examination of the facts to be found in the text. These facts had to find a place on the map no doubt, but a place had to be found for them in a system of things previously determined. They had no share in fixing that system.

The face map (No. 1) is very obviously a deliberate attempt to fit in all the facts into a fanciful order of things which symbolizes, without representing, the true state of affairs. The map may fairly be regarded as an unconscious satire on much of the hypothesis-making in higher philosophical circles. It is a useful diagram of one of the idols of the theatre.

Map No. 2 is drawn on a peculiarly streaked and coloured paper which makes not a bad imitation of bark. The drawing and printing are of the roughest possible description. The whole production conveys the impression that there is a deliberate desire to represent such a rough draught as Robinson himself might have made with the limited apparatus at his disposal after his return, or more probably on shipboard on his way home. For the draughtsman is evidently working under the influence of the *directions*, where he was told to make such a map as Crusoe "might have showed to his friends after he came home." Dominated by this idea, the boy has modified all the rest to suit, and who shall say that he has not attained a considerable degree of success?

Still another form of preconception arises from the prominence in the minds of the competitors of some familiar island as represented on the school map. Many minds in conceiving an island do not get beyond the pictorial stage; do not, indeed, reach even to the receptual stage; but actually think all islands under some standard concrete form. The Isle of Wight and the Isle of Man appear to be the two most powerful in determining the shape of such maps as do not give



MAP 3.

traces of careful preparation from the text. Two maps are of special interest as being obviously modelled on *Trinidad*. If this is done deliberately, it indicates a very creditable insight into the meaning of the method of analogy. Crusoe's Island itself has, in some minds, a shape of its own, entirely independent of the facts to be elicited from the text. The accompanying curious sketch (Map No. 3) was drawn for me with the utmost readiness by a clever and remarkably well-read friend, who assured me that this exactly represented what he

had always regarded as *the* Robinson Crusoe Island. He had no grounds whatever for his choice of shape, yet he felt sorry that anything should be done to deprive him of the belief he had in his own island.

Among the more general grounds that determined the preconception on which a map was founded, are the desire to make a pretty map, and the influence of the kind of map to which the competitor has been accustomed. The use of colours, borders, compass-dials, are the result of the former influence; the special form of contour maps, charts, and bird's-eye-view pictorial maps are due to the latter.

Limiting ourselves to the effects of the information supplied by the text of the story, we may easily divide all of the maps into two classes: those which have a peninsula in the southeast corner, and those which have not. The latter, a sufficiently large class, represent the work of those who did not read the second part, where the description of this peninsula occurs. Of the former class there are, again, two divisions, according as the first or second part of the story has had the greater influence. In most cases the first part has been the dominant one, which for obvious reasons is natural. The competitors who lay more stress on the second part indicate this by the division of the whole island into provinces after the manner of a regular political map (No. 4), and by labelling them as belonging to the Spaniards, the Indians, and the Villainous Englishmen respectively.

Of the three processes, — collecting the facts, collating them and forming an explanatory hypothesis, re-

producing the facts according to this hypothesis,—it is naturally the middle one that gives most trouble. The hypothesis is often wildly made; but once having made a hypothesis, the competitors spare no pains in trying to fit in their facts. For example, many maps show the following peculiarity. Every measurement that is positively given in the text is reproduced exactly, but any measurement or relation that can only be inferred from a comparison of two separate passages is neglected. In other words, the island is represented in the competitor's mind by a series of what Mr. Stout would call "floating" systems of ideas, each perfectly consistent within itself, but which must be modified by fighting its way into the general system to which it belongs.

The "first-prize" map (No. 5) is fortunately good enough to illustrate the result of the successful struggle of those floating systems to find their true place in the containing system. Almost without exception, every measurement given in the text is accurately reproduced on this map. Compare, for example, the distances of the various ships from the shore, the distance from the castle to the watch-hill, the length of the tongue of land and its breadth, the bower half-way between the castle and the boat, the distance to the various rocks that deflected the currents. The only point where there is a noticeable discrepancy is in the distance of the north current, which is greater than the league that Robinson gives it, and the distance between the north and south track of the boat. This distance the book states to be two leagues. In the map it is more. This latter discrepancy

ancy would probably be avoided by placing the tongue of land given to the savages somewhat farther south. This is desirable on other grounds, as in its present position it can hardly be said to be "on the southeast corner of the island."

With these trifling exceptions, the map co-ordinates all the systems, and produces a whole which has the additional advantage of eliminating the draughtsman altogether. The map is purely abstract. Everything is represented merely in terms of extension. De Foe's ideas have received the minimum amount of alteration in passing through the mind of the map-drawer. Where those ideas are self-contradictory, the draughtsman chooses the alternative that causes least disarrangement of the general plan of the island.

So far we have been regarding this island under only one aspect, — its extension. Suppose the wider problem were set, to write a full account of the island in all respects, we might at first sight think that very little could be added beyond a few general remarks, such as one finds about the beginning of a certain class of novel. But, as a matter of fact, enough data are given to determine very minutely every detail. To begin with, poor De Foe would very soon have to yield his authority to better men. No doubt he lays down the conditions to the problem, but it does not follow that he understands all that each condition implies. The mere longitude and latitude of the island establish a great crowd of circumstances unknown to De Foe. The fact that there was an earthquake opens up lines of limitations that only geological specialists can work

out, even imperfectly. The plants that Robinson grew, the animals that he shot, all bring their limitations. It is the old story. To do anything well enough to please a German philosopher, one must exhaust the universe. One must sit with Lotze in the spider-web of phenomena supplied by De Foe, and seek if haply by some means or other one may reach the centre, whence all things can be seen in their true relations. There is no royal road to the centre. Each must find a way for himself, some fairly direct, most very crooked indeed, everything depending on the number and nature of the apperception masses. In this search for fragments of truth, temporary resting-places for general views, the schoolmaster has to play the part of spider. A benevolent spider, be it understood, whose business is not to make plain the already geometrically clear lines of the web, but to see that guiding apperception masses are so arranged that they shall lead ultimately to the centre, by the way, however crooked it may seem, that is best for each seeker.